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AIR FORCE OCCUPATIONAL MEASUREMENT CENTER RANDOLPH AFB TX F/G 5/9  
DIGITAL NAVIGATION/TACTICS TRAINING DEVICES CAREER LADDER, AFSC--ETC(U)  
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9 OCCUPATIONAL SURVEY REPORT (Final)

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6 DIGITAL NAVIGATION/TACTICS TRAINING  
DEVICES CAREER LADDER  
AFSCs 34136, 34156, AND 34176.

AFPT 90-341-322

11 DECEMBER 1978

OCCUPATIONAL SURVEY BRANCH  
USAF OCCUPATIONAL MEASUREMENT CENTER  
RANDOLPH AFB TEXAS 78148

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## PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Digital Navigation/Tactics Training Devices career ladder (AFSCs 34136, 34156, and 34176). The project was directed by USAF Program Technical Training, Volume 2, dated February 1977. Authority for conducting occupational surveys is contained in AFR 35-2. Computer outputs from which this report was produced are available for use by operating and training officials.

The survey instrument was developed by Second Lieutenant Linda A. Wiekhorst, Inventory Development Specialist. Captain Frederick B. Bower, Jr. and Mr. Guy B. Cole, Occupational Survey Analysts, analyzed the data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Survey Branch, USAF Occupational Measurement Center, Randolph AFB, Texas, 78148.

Computer programs for analyzing the occupational data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Copies of this report are available to air staff sections, major commands, and other interested training and management personnel upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Randolph AFB, Texas 78148.

This report has been reviewed and is approved.

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## SUMMARY OF RESULTS

1. Survey Coverage: Inventory booklets were administered to Digital Navigation/Tactics Training Devices personnel during the period December 1977 through April 1978. Survey results are based on responses from 277 of the 396 incumbents assigned, or 70 percent of the total assigned career ladder population.
2. Career Ladder Structure: Five major groupings of jobs were identified within the career ladder. Three groups performed tasks primarily relating to the operation and maintenance of digital navigation/tactics training devices and were differentiated by the number of tasks performed and the percent of time spent performing various maintenance and supervisory duties. The remaining two groups consisted of personnel in special technical positions and airmen involved with formal training.
3. DAFSC Differences: Jobs performed by members of the career ladder were fairly homogeneous. The 3- and 5-skill level incumbents were primarily performing tasks relating to performing preventive maintenance, operating training devices, and removing or replacing system components. However, the 5-skill level airmen perform a higher average number of tasks than do 3-skill level airmen. At the 7-skill level, respondents spend the majority of their time performing technical tasks and duties, although they also function as supervisors.
4. CONUS/Overseas Comparison: No major differences were noted between the CONUS and overseas 5-skill level groups, although 5-skill level airmen average a higher number of tasks performed and a higher career ladder experience level.
5. AFR 39-1 Evaluation: The current AFR 39-1 specialty descriptions were found to accurately portray the duties and responsibilities of personnel in the career ladder.
6. STS Evaluation: Overall the STS was found to be up to date and complete in providing general training requirements. However, many paragraphs were subject knowledge rather than task knowledge oriented, making a complete analysis difficult.
7. Implications: There is a similarity of basic knowledges and skills, as evidenced by the performance of a large number of common tasks between this and four of the 6 other ladders in this career field. Based on these similarities it may be possible to restructure the career field to provide a more efficient and viable career ladder structure.



OCCUPATIONAL SURVEY REPORT  
DIGITAL NAVIGATION/TACTICS TRAINING DEVICES CAREER LADDER  
(AFSCs 34136, 34156, AND 34176)

INTRODUCTION

↘ This is a report of an occupational survey of the Digital Navigation/Tactics Training Devices career ladder conducted by the Occupational Survey Branch, USAF Occupational Measurement Center, and completed during November 1978. This specialty was created in April 1976, when the AFS 343X0, Navigation/Bomb/ Tactics Trainer career ladder, was split forming this ladder and the AFS 341X5, Analog Navigation/Tactics Training Devices career ladder. An occupational survey for the 343X0 career ladder was conducted and the results published in March 1974.

Responsible primarily for the operation and maintenance of digital navigation/tactics training devices, personnel normally enter this career ladder by first attending the C3ABR34136 Digital Navigation/Tactics Training Devices Specialist course at Chanute AFB, Illinois. These personnel may be either "pipeline" students from basic training or retrainees from other specialties. Upon completion of this 18 week three day course, graduates are awarded the 3-skill level and are assigned to operational units worldwide possessing digital navigation/tactics training devices. At present, the career ladder is under strength in the first enlistment, the eight, nine and 12+ year groups, and in the grades of E-6 and E-7 as reported in the USAF Retraining Advisory. ↙

This report is intended to examine the Digital Navigation/Tactics Training Devices career ladder based on tasks performed by survey respondents. Topics discussed in this report include: (1) development and administration of the survey instrument; (2) the job structure found within the career ladder and the relationship to skill level and experience level groupings; (3) comparisons of the job structure with current career ladder documents such as the AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS); (4) comparison of the results of this study with results from the previous survey; and (5) background data relative to job satisfaction.

The survey instrument used to collect the data for this report was designed to survey all seven Training Devices career ladders. Therefore, it was possible to compare this specialty with the other ladders in the career field. An analysis of the AFS 341XX Training Devices career field is attached as an Addendum to this report. Since all career ladders in this field combine at the 9-skill level, the analysis of AFS 34197 personnel is also included in the Addendum.

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## INVENTORY DEVELOPMENT

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-341-322. The survey instruments from previous studies of career ladders in the Training Devices career field served as the starting point for development of this new task inventory. The previous task lists were expanded and refined through a thorough research of career field publications and directives. Inventory developers then conducted personal interviews with 44 subject matter specialists at eight separate facilities to review the tentative task list for completeness and accuracy. This process resulted in a final comprehensive "career field" inventory of 1,144 tasks grouped under 21 duty headings and a background section that requested information about the respondents such as grade, TAFMS, duty title, and job interest.

## INVENTORY ADMINISTRATION

During the period December 1977 through April 1978, consolidated base personnel offices in operational units worldwide administered the inventory to job incumbents holding DAFSC 341XX. These job incumbents were selected from a computer generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL). Each individual who completed the inventory first completed an identification and biographical information section (background section), and then checked each task performed in their current job.

After checking all tasks performed, each incumbent then rated each of these tasks on a nine-point scale showing relative time spent on that task as compared to all other tasks checked. The ratings ranged from one (very-small-amount time spent) through five (about-average time spent) to nine (very-large-amount time spent). To determine relative time spent for each task checked by a respondent, all of an incumbents ratings are assumed to account for 100 percent of the individuals time spent on the job and are summed. Each task rating is then divided by the total task responses and the quotient multiplied by 100. This procedure provides a basis for comparing tasks in terms of the average percent time spent performing any given task or any group of tasks.

## SURVEY SAMPLE

Personnel were selected to participate in this survey so as to insure a balanced representation across MAJCOM and DAFSC groups. Table 1 reflects the percentage distribution, by major command, of assigned personnel in the AFS 341X6 career ladder as of March 1978. Also reflected is the distribution of incumbents in the final survey

sample. The 277 respondents making up the final sample represent 70 percent of the 396 members making up the Digital Navigation/Tactics Training Devices career ladder.

Tables 2 and 3 reflect the distribution of the survey sample in terms of DAFSC and TAFMS groups. Although reported, the sampling of 3-skill level personnel was low and may not be fully representative of performance in this skill level. Sampling for the 5- and 7-skill levels, however, were within acceptable limits to provide accurate representation of performance within these skill levels.

TABLE 1

COMMAND REPRESENTATION OF THE SURVEY SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
TAC	45	43
SAC	17	17
MAC	16	16
USAFE	11	13
ATC	7	8
OTHER	4	3
TOTAL	<u>100</u>	<u>100</u>

TOTAL ASSIGNED - 396  
 TOTAL SAMPLED - 277  
 PERCENT OF SAMPLE - 70%

TABLE 2

DAFSC REPRESENTATION OF THE SURVEY SAMPLE

<u>DAFSC</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
34136	23	9
34156	43	48
34176	34	43
NO RESPONSE	-	-

TABLE 3

SURVEY DISTRIBUTION BY MONTHS TIME IN SERVICE

	<u>1-48</u>	<u>49-96</u>	<u>97-144</u>	<u>145-192</u>	<u>193-240</u>	<u>241+</u>
NUMBER IN SAMPLE	100	45	46	38	33	15
PERCENT OF SAMPLE	36%	16%	17%	14%	12%	5%



## CAREER LADDER STRUCTURE

A key aspect of the occupational survey program is to examine the job structure of career fields or ladders on the basis of what people are actually doing in the field, rather than on the basis of how official career field and ladder documents say they are structured. This analysis of actual job structure is made possible by the use of the Comprehensive Occupational Data Analysis Programs (CODAP). By using CODAP, job functions are identified on the basis of similarity in tasks performed and relative time spent performing the tasks. Using the job structure as a starting point, it is then possible to first describe the career field or career ladder as it presently exists, and then, in turn, evaluate the pertinent career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard.

The career ladder structure analysis process consists of determining the functional job structure of career ladder personnel in terms of job types, clusters, and independent job types. A job type is a group of individuals who perform many of the same tasks and also spend similar amounts of time performing them. When there is a substantial degree of similarity between different job types, they are grouped together and labeled as clusters. Finally, there are often cases of specialized job types that are too dissimilar to be grouped into any cluster. These fairly unique groups are labeled independent job types.

Based on task similarity and relative time spent, the best division of the jobs performed in the 341X6 career ladder is illustrated in Figure 1. These clusters and job types are listed below. The GRP numbers shown beside each title is a reference to computer printed information included for use by classification and training officials.

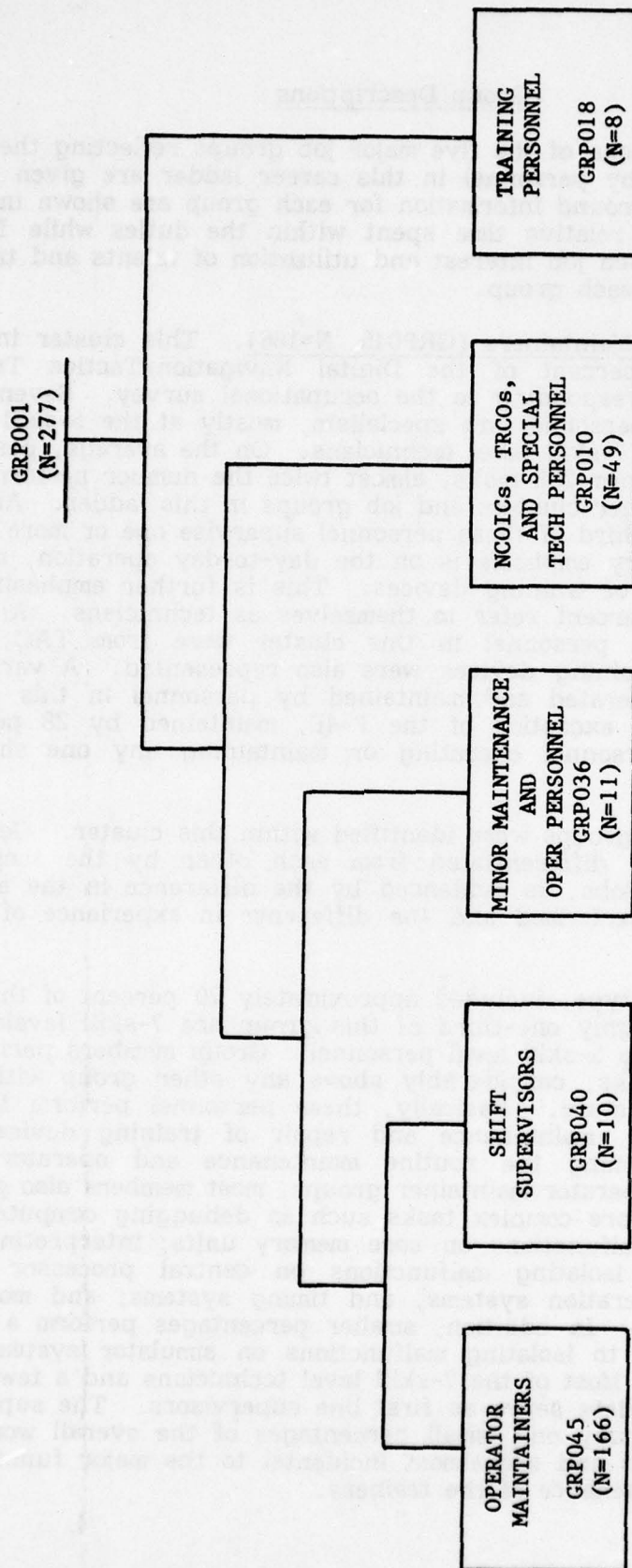
- I. Operator Maintainers (GRP045, N=166)
- II. Shift Supervisors (GRP040, N=10)
- III. Minor Maintenance and Operation Personnel (GRP036, N=11)
- IV. NCOIC, TRCOs and Special Technical Personnel (GRP010, N=49)
- V. Training Personnel (GRP018, N=8)

Eighty-eight percent of the respondents in the 341X6 career ladder sample were found to perform jobs roughly equivalent to those described in the clusters and job types listed above. The remaining 12 percent performed jobs that were so heterogeneous that they were not grouped with any of these major groups or with each other.



FIGURE 1

DIGITAL NAVIGATION/TACTICS TRAINING DEVICES CAREER LADDER STRUCTURE



### Group Descriptions

Brief descriptions of the five major job groups reflecting the kinds of jobs performed by personnel in this career ladder are given below. Summaries of background information for each group are shown in Table 4. Table 5 shows relative time spent within the duties while Table 6 reflects the expressed job interest and utilization of talents and training by the numbers of each group.

I. Operator Maintainers (GRP045, N=166). This cluster includes approximately 60 percent of the Digital Navigation/Tactics Training Devices personnel responding to the occupational survey. Seventy-one percent of these personnel are specialists, mostly at the 5-skill level. The remainder are 7-skill level technicians. On the average, personnel in this cluster perform 298 tasks, almost twice the number performed by personnel in the other clusters and job groups in this ladder. Although approximately one-third of these personnel supervise one or more subordinates, the primary emphasis is on the day-to-day operation, maintenance, and repair of training devices. This is further emphasized by the fact that 87 percent refer to themselves as technicians. Although almost half of the personnel in this cluster were from TAC, other commands using training devices were also represented. A variety of simulators were operated and maintained by personnel in this group; however, with the exception of the F-4E, maintained by 28 percent, percentages of personnel operating or maintaining any one simulator were rather small.

Five job type groups were identified within this cluster. Generally these groups were differentiated from each other by the scope and complexity of the jobs, as evidenced by the difference in the average number of tasks performed and the difference in experience of group members.

The first job-type, included approximately 70 percent of the cluster members. Roughly one-third of this group are 7-skill levels, with the remainder being 5-skill level personnel. Group members perform an average of 347 tasks, considerably above any other group within the career ladder structure. Basically, these personnel perform the full scope of operation, maintenance and repair of training devices. In addition to performing the routine maintenance and operator tasks common to other operator maintainer groups, most members also perform a variety of the more complex tasks such as debugging computer programs; isolating malfunctions on core memory units; interpreting computer languages; isolating malfunctions on central processor units, digital target generation systems, and timing systems; and modifying computer software. In addition, smaller percentages perform a few of the tasks relating to isolating malfunctions on simulator systems with analog computers. Most of the 7-skill level technicians and a few of the 5-skill level specialists serve as first line supervisors. The supervisor tasks, however, occupy only small percentages of the overall work time of these individuals and are almost incidental to the major functions of operation and maintenance of the trainers.

The second job-type within this cluster included eight individuals who performed an average of only 195 tasks as compared to the 347 average performed by members of the preceding group. Members of this small group specialize on operation and maintenance of radar systems. For example, all members perform such tasks as: operate terrain following radar, operate terrain avoidance radar, adjust flying spot scanner (FSS) circuits, remove or install indicators, document discrepancies of simulator performances and load digital computer programs. Three-fourths or more of the group also operate and isolate malfunctions on attack radars, adjust digital radar landmass systems, adjust terrain following or avoidance systems, and perform a number of general operation and maintenance tasks related to these or other similar training devices systems.

A third group included 18 individuals, most of whom were assigned to MAC and who were either 3- or 5-skill level airmen. Typically these personnel operated and/or maintained C-141 simulators. The most common tasks performed were the routine general maintenance and operating tasks performed by most of the other groups such as clean up shops, isolate malfunctions using schematics or wiring diagrams, remove or install soldered components such as transistors, resistors, or capacitors; visually inspect electrical systems; load digital computer programs; and test electronic components such as diodes, transistors, capacitors or resistors. Although most tasks performed by members of this group were performed by a higher percentage of the members of one or more of the other groups within this cluster, there were a few tasks which were somewhat exclusive to this group. These included the operation, adjustment, and isolation of malfunctions on closed circuit TVs which were performed by very few personnel in other groups. Also higher percentages of this group were engaged in setting up mission and radio aids data and isolating malfunctions on radio aids consoles.

The fourth job-type included seven personnel, five of whom were first line supervisors. All of these personnel were in TAC and most worked on F-4E simulators. Four of the five supervisors in this group supervise digital flight simulator specialists (341X4) as well as personnel from this ladder. Although these individuals supervised a few subordinates, a large percentage of their work time was spent on performing technical tasks. In addition to performing common maintenance tasks, this group also performed such tasks as adjust landmass gantry drive systems; adjust canopy actuating mechanisms; isolate malfunctions on digital linkage control panels, RWR ECM systems such as RHAWs or TEWS, radar altimeter systems, pneumatic systems, optical sight systems, numerical readout units, AOA systems, IFF systems, simulated oxygen systems, stall warning devices, and flight path recorder systems. Although a few of these personnel had less than four years service, overall the group averaged 128 months in service and 77 months in the career field.

The fifth small job type in this cluster included personnel from TAC and USAFE. All but one of these seven personnel were in their



first enlistment, with an average time in the career field of only 23 months. As would be expected, this group performed less tasks than other groups in the cluster and those tasks performed pertained to the routine operation and maintenance of training devices, tasks common to large percentages of the other operator maintainer job types.

II. Shift Supervisors (GRP040, N=10). This small group included primarily personnel who serve as shift supervisors or in charge of a small group of workers. One-half were assigned to USAFE with the remainder assigned to TAC or MAC. Supervision and administrative tasks accounted for approximately 30 percent of the overall work time of this group. The remainder of their time was distributed over most of the other duties with operating training devices and performing preventive maintenance taking up the largest amount of the remaining time.

III. Minor Maintenance and Operation Personnel (GRP036, N=11). This small job type group includes seven airmen from MAC, three from SAC, and one from PACAF. Only 107 tasks are performed on the average by these personnel. Tasks which are common to the majority of these personnel are primarily those pertaining to routine preventive maintenance and operation of training devices. Typical examples of tasks performed by eighty percent or more of the respondents in this group include clean up shop; test electronic components such as diodes, transistors, capacitors, or resistors; make entries on maintenance forms; strip electrical wires; load digital computer programs; and operate digital computer control panels. There were tasks performed by these personnel that were not also performed by a higher number of members of other groups.

Although these airmen averaged five years military service and 44 months experience in the career ladder, this was lower than the other clusters and job types identified. This may be a factor in the somewhat limited scope of job performed by these personnel. In addition, although almost three-fourths found their job interesting only 64 percent felt that their talents and training were utilized fairly well or better, considerably below the other groups identified.

IV. NCOICs/TRCOs and Special Technical Personnel (GRP010, N=49). This cluster is composed primarily of airmen who have achieved the 7-skill level and have consequently been assigned to a variety of supervisory jobs or to a variety of management or highly technical jobs. Thirty of the 49 members, or 61 percent, supervise one or more personnel. These individuals serve in a number of different types of supervisory positions ranging from assistant branch chiefs to NCOICs of flight simulator sections to shift supervisors. The number of personnel supervised range from one to 16. Almost 84 percent of the work time of these supervisory personnel is devoted to the supervisory and administrative duties and include such tasks as schedule work assignments, assign priorities, counsel personnel, direct shop housekeeping, evaluate maintenance performed, evaluate progress of trainees, etc.



The remainder of the personnel in this cluster perform such specialized functions as development or evaluation of new or modified training devices, computer programs, technical orders, manuals or publications. Typically these personnel perform a relatively small number of highly technical tasks in accomplishing such assignments as development technicians, Technical Representative to the Contracting Officer, and MAJCOM Training Development Manager.

V. Training Personnel (GRP018, N=8). The eight personnel in this group serve as instructors, instructor supervisors, training NCOs or training managers. All of these personnel develop curricula, plans of instruction, specialty training standards, or training plans. A majority also evaluate training methods, techniques, or programs; conduct classroom training; evaluate progress of training and counsel trainees on training progress. Typically these personnel perform a small number of tasks directly related to the training function with relatively few performing any operating or maintenance tasks.

### Summary

Five major groupings of jobs were identified within this career ladder. Two of these groups were composed of personnel who performed the day-to-day operation and maintenance of training devices. Although there were differences in systems maintained by these personnel, clear cut divisions based on command assignment or equipment operated and/or maintained were not evident in the career ladder analysis. The primary clustering factor appeared to be the number of tasks performed, with time in the career ladder directly relative to the scope and complexity of jobs performed, as evidenced by an increase in the number of tasks performed as personnel gain experience in the field. The other three groups contained airmen with supervisory responsibility or who performed such specialized jobs as Technical Representative to the Contracting Officer training devices development personnel, quality control technicians, MAJCOM representatives, or training functions.

TABLE 4  
BACKGROUND INFORMATION BY JOB GROUPS

	OPERATOR MAINTAINERS	SHIFT SUPERVISORS	MINOR MAINTENANCE AND OPERATION PERSONNEL	NCOICs, TRCOs, AND SPECIAL TECHNICAL PERSONNEL	TRAINING PERSONNEL
AVERAGE NUMBER OF TASKS PERFORMED	298	155	107	92	28
AVERAGE PAYGRADE	4.4	5.4	5.9	6.4	5.6
PERCENT OF MEMBERS IN FIRST ENLISTMENT	49%	10%	55%	2%	0%
PERCENT ASSIGNED OVERSEAS	19%	50%	9%	12%	0%
PERCENT OF MEMBERS WHO SUPERVISE	30%	60%	27%	61%	25%
AVERAGE TIME IN 341XX CAREER FIELD	53 MONTHS	86 MONTHS	44 MONTHS	110 MONTHS	115 MONTHS
AVERAGE TOTAL ACTIVE MILITARY SERVICE	80 MONTHS	137 MONTHS	60 MONTHS	190 MONTHS	166 MONTHS
REPRESENTATION WITHIN GROUPS					
MEMBERS WHO ARE 3-SKILL LEVEL	9%	0%	36%	0%	0%
MEMBERS WHO ARE 5-SKILL LEVEL	62%	20%	55%	4%	38%
MEMBERS WHO ARE 7-SKILL LEVEL	29%	80%	9%	96%	62%

TABLE 5

## PERCENT TIME SPENT ON DUTIES

16

DUTIES	OPERATOR MAINTAINERS	SHIFT SUPERVISORS	MINOR MAINTENANCE AND OPERATION PERSONNEL	NCOs, TRCOs, AND SPECIAL TECHNICAL PERSONNEL	TRAINING PERSONNEL
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>					
A ORGANIZING AND PLANNING	1	3	*	15	5
B DIRECTING AND IMPLEMENTING	3	9	3	21	12
C INSPECTING AND EVALUATING	1	6	*	24	9
D TRAINING	1	5	2	9	64
<u>ADMINISTRATIVE FUNCTIONS</u>					
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES OR TECHNICAL DATA	3	8	6	8	2
<u>TECHNICAL FUNCTIONS</u>					
F PERFORMING PREVENTIVE MAINTENANCE	12	9	19	3	0
G OPERATING TRAINING DEVICES	16	22	20	7	3
H OPERATING MISSILE PROCEDURES TRAINERS	*	*	*	*	0
I ISOLATE MALFUNCTIONS ON COMPUTERS AND PERIPHERAL EQUIPMENT	4	3	1	2	2
J ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS AND PERIPHERAL EQUIPMENT	5	3	3	*	0
K ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH ANALOG COMPUTERS	1	*	2	*	0
L ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH DIGITAL COMPUTERS	5	3	2	1	0
M ISOLATE MALFUNCTIONS ON SIMULATOR AND COMPUTER COMPONENTS	8	3	4	3	2
N ISOLATE MALFUNCTIONS ON MISSILE PROCEDURE TRAINERS	*	0	0	*	0
O REMOVING OR REPLACING COMPONENTS OR SYSTEM UNITS	15	7	16	2	0
P ALIGNING AND ADJUSTING SIMULATOR SYSTEMS OR COMPONENTS	10	4	8	1	0
Q PERFORMING IN-SHOP MAINTENANCE	6	2	6	1	0
R PERFORMING INSTRUMENT TRAINER INSTRUCTION FUNCTIONS	2	3	*	*	0
S MAINTAINING MOBILE AIRCREW TRAINING DEVICES	*	0	0	*	0
T PERFORMING OPERATIONAL CHECKS	4	5	3	2	0
U MAINTAINING MISCELLANEOUS EQUIPMENT	2	4	3	*	*

\* INDICATES LESS THAN ONE PERCENT



TABLE 6

EXPRESSION OF JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS AND TRAINING BY JOB TYPE GROUPS  
(PERCENT RESPONDING)

	OPERATOR MAINTAINERS	SHIFT SUPERVISORS	MINOR MAINTENANCE AND OPERATION PERSONNEL	NCOICs, TRCOs, AND SPECIAL TECHNICAL PERSONNEL	TRAINING PERSONNEL
I FIND MY JOB:					
DULL	4	20	18	6	0
SO-SO	5	0	9	6	13
INTERESTING	91	80	73	88	87
MY JOB UTILIZES MY TALENTS:					
NOT REPORTED	1	0	0	2	0
NOT AT ALL TO VERY LITTLE	14	40	36	12	0
FAIRLY WELL TO VERY WELL	74	60	64	59	75
EXCELLENTLY TO PERFECTLY	11	0	0	27	25
MY JOB UTILIZES MY TRAINING:					
NOT AT ALL TO VERY LITTLE	25	40	36	25	12
FAIRLY WELL TO VERY WELL	70	50	64	61	75
EXCELLENTLY TO PERFECTLY	5	10	0	14	13



## ANALYSIS OF DAFSC GROUPS

In conjunction with examining the job structure of the career ladder, DAFSC groups are also examined as part of each occupational analysis. This analysis allows for the identification of skill level differences and for comparison of similar skill level personnel across various career ladders (See Career Field Addendum). This data by DAFSC groups is used in the analysis of career ladder documents such as the AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS).

Jobs within the Digital Navigation/Tactics Training Devices career ladder represent a relatively homogeneous grouping encompassing duties and tasks specific to the operation and maintenance of digital navigation/tactics training devices. Table 7 depicts the relative percent of time spent by skill level groups on the various duties listed in the job inventory. There is a clear differentiation between 3- and 5-skill level technical specialists and the 7-skill level supervisors. As would be expected, those jobs requiring more supervision, management or technical skill are performed by higher skill level personnel. However, 7-skill levels continue to spend more of their time performing technical duties as opposed to supervisory and management functions. Representative tasks performed by members of this career ladder are listed in Table 8.

### Skill Level Groups

As a group, DAFSC 34136 apprentice digital navigation/tactics training devices specialists perform an average of 167 of the 1,144 tasks listed in the job inventory. They spend 52 percent of their time performing in three duty areas; performing preventive maintenance, operating training devices, and removing or replacing system components. Thirteen tasks which are representative of those performed by 3-skill level personnel are listed in Table 9. However, 82 tasks are performed by 50 percent or more of the group indicating a great deal of homogeneity in the 3-skill level job.

Averaging 244 tasks performed, the 5-skill level digital navigation/tactics training devices specialists perform much like the 3-skill level group in that they are spending 44 percent of their time in the same three duty areas of performing preventive maintenance, operating training devices, and removing or replacing system components. However, 5-skill levels spend more time performing supervisory and management functions and in the more difficult duty areas such as isolating malfunctions. While both jobs are essentially technical, the 5-skill level job is more complicated and involved because of the inclusion of more difficult technical and supervisory tasks. Representative tasks for this group appear in Table 10.

At the 7-skill level, tasks performed shift from technical toward supervisory functions (See Table 7). However, DAFSC 34176 personnel are still spending 52 percent of their time performing technical functions. Only 64 percent of this group indicated they were supervisors, which could explain the low amount of time spent on supervisory duties. In addition to performing routine as well as the more difficult tasks relating to training devices maintenance, 7-skill level personnel also spend a large block of their time operating training devices. Although averaging 190 tasks performed, only 39 of those tasks are performed by 50 percent or more of this group making it the least homogeneous of the DAFSC groups in this ladder. Only 14 tasks are performed by 60 percent or more of DAFSC 34176 personnel. These are the most representative of tasks performed by this group and are listed in Table 11. The differences between 5- and 7-skill level personnel are shown in Table 12. As would be expected, the differences are routine technical tasks for the 5-skill level group and supervisory tasks for the 7-skill level group.

A factor that may account for the low degree of homogeneity in this career ladder is the diverse number of training devices and computers operated and maintained by AFS 341X6 personnel. Table 13 illustrates this diversity and the low percentages operating and maintaining any one type of this equipment.

TABLE 9

REPRESENTATIVE TASKS PERFORMED BY DAFSC 34136 PERSONNEL  
(N=26)

TASKS	PERCENT MEMBERS PERFORMING
F19 CLEAN UP SHOPS	88
F9 CLEAN HAND TOOLS OR SHOP EQUIPMENT	88
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	85
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	85
F45 STRIP ELECTRICAL WIRES	85
U6 MAINTAIN AREA BEAUTIFICATION	81
T11 PERFORM PREFLIGHT OPERATIONAL CHECKS	77
G12 LOAD DIGITAL COMPUTER PROGRAMS	77
F17 CLEAN SOLDERING IRONS	77
Q62 SOLDER TRANSISTORIZED CIRCUITS	73
O104 REMOVE OR INSTALL SOLDERED COMPONENTS SUCH AS TRANSISTORS, RESISTORS, OR CAPACITORS	73
F60 VISUALLY INSPECT WIRE HARNESES, CABLES, OR CONNECTOR PLUGS	73
F6 CLEAN AIR FILTERS	73



TABLE 10

REPRESENTATIVE TASKS PERFORMED BY DAFSC 34156 PERSONNEL  
(N=131)

TASKS	PERCENT MEMBERS PERFORMING
F19 CLEAN UP SHOPS	92
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	87
F54 VISUALLY INSPECT POWER SUPPLY SYSTEMS	83
G6 DOCUMENT DISCREPANCIES OF SIMULATOR PERFORMANCES	82
F45 STRIP ELECTRICAL WIRES	82
F50 VISUALLY INSPECT ELECTRICAL SYSTEMS	80
O56 REMOVE OR INSTALL INDICATORS	80
F58 VISUALLY INSPECT VOLTAGE LEVELS, FREQUENCY VARIATIONS, OR CURRENT	80
F60 VISUALLY INSPECT WIRE HARNESES, CABLES, OR CONNECTOR PLUGS	80
Q40 OPERATE DIGITAL COMPUTER CONTROL PANELS	79
F17 CLEAN SOLDERING IRONS	79
M47 ISOLATE MALFUNCTIONS USING SCHEMATICS OR WIRING DIAGRAMS	79
Q62 SOLDER TRANSISTORIZED CIRCUITS	78
F37 PHYSICALLY CHECK FOR LOOSE MOUNTINGS OR CONNECTIONS	78
F6 CLEAN AIR FILTERS	78
G101 OPERATE TELETYPESWRITERS	77
G134 VISUALLY OBSERVE CONSOLE INDICATORS	76
G12 LOAD DIGITAL COMPUTER PROGRAMS	76
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	76
O76 REMOVE OR INSTALL PARTS IN CLOSED CIRCUIT TV VISUAL ATTACHMENTS	76
P2 ADJUST AC OR DC SUPPLIES	76
O8 REMOVE OR INSTALL AIR FILTERS	76
E11 MAKE ENTRIES ON SIMULATOR MAINTENANCE FORMS SUCH AS AFTO FORMS 349, 350, 359, 781 OR 781A	76
G41 OPERATE DIGITAL COMPUTER SYSTEMS	76

TABLE 11  
 REPRESENTATIVE TASKS PERFORMED BY DAFSC 34176 PERSONNEL  
 (N=120)

TASKS	PERCENT MEMBERS PERFORMING
E11 MAKE ENTRIES ON SIMULATOR MAINTENANCE FORMS SUCH AS AFTO FORMS 349, 350, 359, 781 OR 781A	73
E18 RESEARCH OR REQUISITION SUPPLY STOCK NUMBERS OR PARTS	71
B8 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	70
D10 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	67
C37 PREPARE APRs	65
E3 IDENTIFY SIMULATOR PARTS	64
B16 DIRECT SHOP HOUSEKEEPING	63
D11 DEMONSTRATE OPERATION OF EQUIPMENT	63
B31 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	63
D17 MAINTAIN OJT RECORDS	62
A3 ASSIGN WORK PRIORITIES	60
E12 MAKE ENTRIES ON SUPPLY CONTROL LOG FORMS (AF FORM 2413)	60
G41 OPERATE DIGITAL COMPUTER SYSTEMS	60
G40 OPERATE DIGITAL COMPUTER CONTROL PANELS	60

TABLE 12

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 34156 AND 34176 PERSONNEL  
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC		DAFSC		DIFFERENCE
	34156	34176	34156	34176	
F19 CLEAN UP SHOPS	92	43			+49
F45 STRIP ELECTRICAL WIRES	82	38			+44
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	87	47			+40
F17 CLEAN SOLDERING IRONS	79	39			+40
P48 ADJUST HANDSETS OR HEADSETS	63	23			+40
O56 REMOVE OR INSTALL INDICATORS	80	41			+39
O8 REMOVE OR INSTALL AIR FILTERS	76	38			+38
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	76	39			+37
C37 PREPARE APRs	14	65			-51
C16 EVALUATE MAINTENANCE PERFORMED ON COMPUTER EQUIPMENT	8	58			-50
B8 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	21	70			-49
C19 EVALUATE MAINTENANCE PERFORMED ON SIMULATOR CONSOLES	10	58			-48
B61 SUPERVISE DIGITAL NAVIGATION/TACTICS SIMULATOR SPECIALISTS (AFSC 34156)	11	58			-47
C18 EVALUATE MAINTENANCE PERFORMED ON PERIPHERAL EQUIPMENT	11	58			-47
C20 EVALUATE MAINTENANCE PERFORMED ON SIMULATOR SYSTEMS	12	58			-46



TABLE 13

MAJOR EQUIPMENT OPERATED AND MAINTAINED BY FIVE PERCENT OR MORE  
OF 341X6 PERSONNEL

<u>SIMULATORS</u>	<u>PERCENT OPERATING</u>	<u>PERCENT MAINTAINING</u>
NONE	25	16
C-5/A	4	5
C-141	8	11
F-4E	19	20
F-15A	6	7
F-111	5	4
FB-111A	8	11
OTHER	5	5

<u>COMPUTERS</u>	<u>PERCENT OPERATING OR MAINTAINING</u>
ADAGE	7
COMRAC COMMERCIAL DIGITAL	6
GP-4	7
GP-4B	38
HARRIS 6024/4	8
RAYTHEON COMMERCIAL DIGITAL 703	18
SEL 840-A	7
SEL 840-MP	5
SIGMA 5-COMMERCIAL	12
TEXAS INSTRUMENTS 980B	9
OTHER	9

## ANALYSIS OF AFMS GROUPS

An analysis was also conducted comparing job differences among individuals grouped by time in service. Very similar conclusions to those for DAFSC groups were noted.

Table 14 reflects the relative percent of time spent on duties by AFS 341X6 personnel grouped by enlistment period. Throughout all enlistment periods, airmen tend to move into positions of greater supervisory and management responsibility as they gain time in service. The longer time individuals spend in service, the less time they spend performing technical tasks and duties. However, it is not until the fifth enlistment before personnel spend more time in supervisory and management functions than they do performing technical functions; and even at this point and beyond, technical duties still occupy a third of these experience groups' time. So for the most part, regardless of experience level, AFS 341X6 personnel will function as "hands-on" equipment technicians throughout their Air Force career.

In looking at jobs performed by first enlistment airmen (1-48 months AFMS), it was found that 147 of the 1,144 inventory tasks were performed by 50 percent or more of this group. The average number of tasks performed is 205, which illustrates the high degree of homogeneity of the first job within this career ladder. The tasks most commonly performed by members of this group are listed in Table 15.

TABLE 14

PERCENT TIME SPENT ON DUTIES BY 341X6 AFMS GROUPS

DUTY	MONTHS TOTAL ACTIVE FEDERAL MILITARY SERVICE					
	1-48 (N=100)	49-96 (N=45)	97-144 (N=46)	145-192 (N=38)	193-240 (N=33)	241+ (N=15)
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>						
A ORGANIZING AND PLANNING	*	*	4	7	10	11
B DIRECTING AND IMPLEMENTING	1	4	7	13	17	19
C INSPECTING AND EVALUATING	*	2	6	14	16	14
D TRAINING	1	6	5	9	7	15
<u>ADMINISTRATIVE FUNCTIONS</u>						
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA	3	3	6	6	7	8
<u>TECHNICAL FUNCTIONS</u>						
F PERFORMING PREVENTIVE MAINTENANCE	14	11	9	6	6	3
G OPERATING TRAINING DEVICES	19	18	15	13	7	7
H OPERATING MISSILE PROCEDURES TRAINERS	1	*	*	*	*	*
I ISOLATE MALFUNCTIONS ON COMPUTERS AND PERIPHERAL EQUIPMENT	3	3	4	3	3	3
J ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS AND PERIPHERAL EQUIPMENT	5	4	4	2	2	1
K ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH ANALOG COMPUTERS	1	1	1	*	1	1
L ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH DIGITAL COMPUTERS	5	4	3	3	3	2
M ISOLATE MALFUNCTIONS ON SIMULATOR AND COMPUTER COMPONENTS	7	7	7	4	4	4
N ISOLATE MALFUNCTIONS ON MISSILE PROCEDURE	*	*	*	*	*	*
O REMOVING OR REPLACING COMPONENTS OR SYSTEM UNITS	15	14	10	7	6	4
P ALIGNING AND ADJUSTING SIMULATOR SYSTEMS OR COMPONENTS	9	8	7	5	4	4
Q PERFORMING IN-SHOP MAINTENANCE	6	6	4	3	3	2
R PERFORMING INSTRUMENT TRAINER INSTRUCTION FUNCTIONS	2	2	2	1	1	*
S MAINTAINING MOBILE AIRCREW TRAINING DEVICES	*	*	*	*	*	*
T PERFORMING OPERATIONAL CHECKS	4	4	4	3	2	2
U MAINTAINING MISCELLANEOUS EQUIPMENT	3	3	1	1	1	1

\* LESS THAN 1%



TABLE 15

REPRESENTATIVE TASKS PERFORMED BY 341X6 PERSONNEL WITH 1-48 MONTHS TAFMS  
(N=100)

TASKS	PERCENT MEMBERS PERFORMING
F19 CLEAN UP SHOPS	95
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	93
F45 STRIP ELECTRICAL WIRES	90
F54 VISUALLY INSPECT POWER SUPPLY SYSTEMS	87
O56 REMOVE OR INSTALL INDICATORS	86
F6 CLEAN AIR FILTERS	86
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	85
F60 VISUALLY INSPECT WIRE HARNESES, CABLES, OR CONNECTOR PLUGS	84
F17 CLEAN SOLDERING IRONS	84
F50 VISUALLY INSPECT ELECTRICAL SYSTEMS	83
F58 VISUALLY INSPECT VOLTAGE LEVELS, FREQUENCY VARIATIONS, OR CURRENT	83
G12 LOAD DIGITAL COMPUTER PROGRAMS	81
F20 CONDUCT PERIODIC MAINTENANCE INSPECTIONS	80
O8 REMOVE OR INSTALL AIR FILTERS	80
F9 CLEAN HAND TOOLS OR SHOP EQUIPMENT	80
J16 ISOLATE MALFUNCTIONS ON HANDSETS, HEADSETS, OR MICROPHONES	80

## ANALYSIS OF CONUS/OVERSEAS DIFFERENCES

A comparison of tasks performed by 5-skill level incumbents assigned within the CONUS and those assigned overseas was made for the AFS 341X6 career ladder. There were few differences noted between the two groups.

With the exception of the time spent performing training duties, the jobs of DAFSC 34156 personnel assigned in the CONUS and those assigned overseas are very comparable. However, since only four percent of DAFSC 34136 personnel are assigned overseas and the 5-skill levels overseas average 54 months experience in the career ladder as opposed to 34 months experience for the CONUS group, it would seem logical that more OJT type training would be conducted at CONUS duty locations. The only other point of note is the fact that overseas 5-skill level personnel perform an average of 269 tasks while the 5-skill level CONUS group averages 240 tasks performed. Therefore, although comparable, the job of the overseas group appears to be more difficult. This is understandable considering the difference in experience level. The differences in the percent of time spent on duties between the two groups is found in Table 16. The tasks which best differentiate between the CONUS and overseas 5-skill level airmen are listed in Table 17.

TABLE 16

PERCENT TIME SPENT BY DAFSC 34156 CONUS AND OVERSEAS GROUPS

DUTIES	DAFSC 34156 ASSIGNED CONUS (N=105)	DAFSC 34156 ASSIGNED OVERSEAS (N=25)
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>		
A ORGANIZING AND PLANNING	1	1
B DIRECTING AND IMPLEMENTING	2	2
C INSPECTING AND EVALUATING	1	1
D TRAINING	4	1
<u>ADMINISTRATIVE FUNCTIONS</u>		
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA	3	3
<u>TECHNICAL FUNCTIONS</u>		
F PERFORMING PREVENTIVE MAINTENANCE	12	11
G OPERATING TRAINING DEVICES	19	17
H OPERATING MISSILE PROCEDURES TRAINERS	*	*
I ISOLATE MALFUNCTIONS ON COMPUTERS AND PERIPHERAL EQUIPMENT	3	4
J ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS AND PERIPHERAL EQUIPMENT	4	6
K ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH ANALOG COMPUTERS	1	2
L ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH DIGITAL COMPUTERS	5	5
M ISOLATE MALFUNCTIONS ON SIMULATOR AND COMPUTER COMPONENTS	7	8
N ISOLATE MALFUNCTIONS ON MISSILE PROCEDURE TRAINERS	*	*
O REMOVING OR REPLACING COMPONENTS OR SYSTEM UNITS	14	14
P ALIGNING AND ADJUSTING SIMULATOR SYSTEMS OR COMPONENTS	9	9
Q PERFORMING IN-SHOP MAINTENANCE	6	6
R PERFORMING INSTRUMENT TRAINER INSTRUCTION FUNCTIONS	2	3
S MAINTAINING MOBILE AIRCREW TRAINING DEVICES	*	*
T PERFORMING OPERATIONAL CHECKS	4	4
U MAINTAINING MISCELLANEOUS EQUIPMENT	3	3

\* INDICATES LESS THAN ONE PERCENT



TABLE 17

TASKS WHICH BEST DIFFERENTIATE BETWEEN CONUS AND OVERSEAS PERSONNEL HOLDING DAFSC 341X6  
(PERCENT MEMBERS PERFORMING)

TASKS	CONUS (N=105)	OVERSEAS (N=25)	DIFFERENCE
E12 MAKE ENTRIES ON SUPPLY CONTROL LOG FORMS (AF FORM 2413)	41	92	-51
U9 PERFORM AUGMENTEE DUTIES	12	60	-48
G125 SET UP GROUND TARGETS	42	84	-42
I43 ISOLATE MALFUNCTIONS ON SIMULATED EMERGENCY MALFUNCTION SYSTEMS	23	64	-41
U8 PAINT EQUIPMENT OTHER THAN SIMULATOR EQUIPMENT	45	84	-39
I21 ISOLATE MALFUNCTIONS ON DRUM ELECTRONIC SYSTEMS	14	52	-38
G8 INSERT AIR-TO-AIR INTERCEPTS	50	88	-38
L36 ISOLATE MALFUNCTIONS ON RWR ECM SYSTEMS SUCH AS RHAWs OR TEWS	42	76	-34
G10 INSERT SIMULATED ELECTRONIC COUNTER MEASURES (ECMs)	50	84	-34
G9 INSERT MALFUNCTIONS OR EMERGENCIES INTO SYSTEMS	63	96	-33
I15 ISOLATE MALFUNCTIONS ON CORE MEMORY UNITS	35	68	-33
J6 ISOLATE MALFUNCTIONS ON ELECTRO-MECHANICAL CONTROL LOADING SYSTEMS	36	68	-32
G68 OPERATE LINE PRINTER UNITS	32	-	+32
G8 INSERT AIR-TO-AIR INTERCEPTS	65	40	+25
G35 OPERATE CLOSED CIRCUIT TV SYSTEMS	22	-	+22
I27 ISOLATE MALFUNCTIONS ON LINE PRINTERS	21	-	+21
I30 ISOLATE MALFUNCTIONS ON MAGNETIC TAPE UNITS	35	16	+19
J2 ISOLATE MALFUNCTIONS ON CLOSED CIRCUIT TVs	19	-	+19
O77 REMOVE OR INSTALL PERIPHERAL EQUIPMENT SUCH AS CARD READERS, TELETYPEWRITERS, MAGNETIC TAPE UNITS OR LINE PRINTERS	39	20	+19
G130 SET UP VISUAL SYSTEMS	18	-	+18

## ANALYSIS OF TASK DIFFICULTY

From the listing of airmen identified to receive the occupational survey inventory, incumbents from various commands and locations who held a 7- or 9-skill level DAFSC and PAFSC were identified to also receive a task difficulty booklet. This booklet contained only the duty/task list section of the original occupational survey inventory. The survey respondent was instructed to rate all of the tasks on a nine-point scale from extremely low to extremely high, with difficulty being defined as the length of time it requires an average incumbent to learn to do the task. Interrater agreement (as assessed through components of variance of standardized group means) among the 56 raters who returned booklets was .96. Ratings were adjusted so that tasks of average difficulty have ratings of 5.00.

Of the 1,144 tasks in the job inventory, 603 were rated above average in difficulty. Twenty-two of the tasks were performed by 50 percent or more of the respondents. Those tasks are listed in Table 18. All the tasks are technical in nature and cover a variety of different maintenance functions, most prominently, operating training devices, malfunction isolation on simulator and computer components, and malfunction isolation on simulator systems and peripheral equipment. All the 22 tasks mentioned were also performed by 50 percent or more of first enlistment airmen, and usually in higher percentages than for the total sample. This indicates that first enlistment airmen are actively involved in performing the more difficult job associated with this career ladder and relegated to performing strictly routine tasks.

Of the 535 tasks rated below average in difficulty, 57 were performed by 50 percent or more of AFS 341X6 respondents. Those tasks performed by 60 percent or more are listed in Table 19. Concentrated in the duties of performing preventive maintenance and removing or replacing components, these 57 tasks comprise the common core of tasks for this career ladder. As in the case of the higher difficulty tasks, these 57 tasks are performed by 50 percent or more of first enlistment airmen, and usually in greater percentages than for the total sample. Since the tasks are relatively routine in nature, and of the type not requiring a great deal of experience, the figures are to be expected.

### Job Difficulty Index (JDI)

Having computed the task difficulty index for each inventory item, it was then possible to compute a Job Difficulty Index (JDI) for any group identified in the survey analysis. The index provides a relative measure of which jobs, when compared to other jobs identified in the analysis, are more or less difficult. The JDI is based on an equation using number of tasks performed and the average difficulty per unit time spent. The indices are then adjusted so that the average job difficulty index is 13.00. The JDI was computed for the major job groups identified in the specialty structure, and this information is presented in Table 20.

TABLE 18

TASKS RATED ABOVE AVERAGE IN DIFFICULTY WHICH ARE PERFORMED BY 50% OR MORE  
OF DAFSC 341X6 RESPONDENTS

TASKS	INDEX	PERCENT PERFORMING	PERCENT FIRST MEMBERS PERFORMING
M8 ISOLATE MALFUNCTIONS ON ANALOG-TO-DIGITAL CONVERTERS	6.35	55	65
I5 INTERPRET DIGITAL INPUTS OR OUTPUTS	6.07	50	53
M47 ISOLATE MALFUNCTIONS USING SCHEMATICS OR WIRING DIAGRAMS	6.03	65	79
M46 ISOLATE MALFUNCTIONS USING DATA FLOW OR BLOCK DIAGRAMS	5.97	52	62
M21 ISOLATE MALFUNCTIONS ON DIGITAL-TO-ANALOG CONVERTERS	5.94	56	67
G41 OPERATE DIGITAL COMPUTER SYSTEMS	5.78	68	78
T21 TEST OPERATE SIMULATORS TO ISOLATE MALFUNCTIONS	5.70	52	63
I38 ISOLATE MALFUNCTIONS ON POWER SUPPLIES	5.67	56	65
M38 ISOLATE MALFUNCTIONS ON PRINTED OR ELECTRONIC CIRCUIT CARDS	5.63	56	72
J45 ISOLATE SIMULATOR MALFUNCTIONS BY INSTRUMENT READINGS	5.48	51	65
G39 OPERATE DIAGNOSTIC TEST PROGRAMS ON SIMULATORS WHICH USE DIGITAL COMPUTERS	5.44	54	56
M25 ISOLATE MALFUNCTIONS ON DISCRETE SWITCH INPUTS	5.43	50	60
G40 OPERATE DIGITAL COMPUTER CONTROL PANELS	5.38	70	79
M26 ISOLATE MALFUNCTIONS ON DISCRETE SWITCH OUTPUTS	5.37	50	60
J46 ISOLATE SIMULATOR MALFUNCTIONS USING CONSOLE READOUTS	5.36	56	71
J5 ISOLATE MALFUNCTIONS ON ELECTRICAL SYSTEMS	5.36	57	76
G63 OPERATE INSTRUCTOR CONSOLES	5.21	58	72
F47 TEST ELECTRO-MECHANICAL COMPONENTS SUCH AS SYNCHROS, RESOLVERS, POTENTIOMETERS, OR TRANSFORMERS	5.19	57	75
T8 OPERATIONALLY CHECK SIMULATOR SYSTEMS	5.19	56	70
J22 ISOLATE MALFUNCTIONS ON INDICATOR SYSTEMS	5.12	52	65
Q61 SOLDER INTEGRATED CIRCUITS	5.12	60	74
Q62 SOLDER TRANSISTORIZED CIRCUITS	5.01	66	79



TABLE 19

TASKS RATED BELOW AVERAGE IN DIFFICULTY WHICH ARE PERFORMED BY 60%  
MORE OF DAFSC 341X6 PERSONNEL

TASKS	DIFFICULTY INDEX	PERCENT TOTAL SAMPLE PERFORMING	PERCENT FIRST ENLISTMENT MEMBERS PERFORMING
E18 RESEARCH OR REQUISITION SUPPLY STOCK NUMBERS OR PARTS	4.94	68	64
D11 DEMONSTRATE OPERATION OF EQUIPMENT	4.84	63	60
O87 REMOVE OR INSTALL PRINTED CIRCUIT BOARD COMPONENTS SUCH AS ICs, CHIPS OR CAPACITORS	4.77	62	77
F20 CONDUCT PERIODIC MAINTENANCE INSPECTIONS	4.64	60	80
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	4.61	69	93
G101 OPERATE TELETYPEWRITERS	4.54	65	78
P2 ADJUST AC OR DC SUPPLIES	4.44	61	76
E11 MAKE ENTRIES ON SIMULATOR MAINTENANCE FORMS SUCH AS AFTO FORMS 349, 350, 359 781 OR 781A	4.26	74	72
J16 ISOLATE MALFUNCTIONS ON HANDSETS, HEADSETS, OR MICROPHONES	4.00	60	80
G134 VISUALLY OBSERVE CONSOLE INDICATORS	3.92	63	79
F58 VISUALLY INSPECT VOLTAGE LEVELS, FREQUENCY VARIATIONS, OR CURRENT	3.82	66	83
G6 DOCUMENT DISCREPANCIES OF SIMULATOR PERFORMANCES	3.81	70	79
O85 REMOVE OR INSTALL POWER SUPPLIES	3.78	60	78
O88 REMOVE OR INSTALL PRINTED CIRCUIT BOARDS OR ELECTRONIC CIRCUIT CARDS	3.72	60	74
F54 VISUALLY INSPECT POWER SUPPLY SYSTEMS	3.59	69	87
F50 VISUALLY INSPECT ELECTRICAL SYSTEMS	3.40	65	83
F37 PHYSICALLY CHECK TEST EQUIPMENT FOR SERVICEABILITY	3.40	61	68
F60 PHYSICALLY CHECK FOR LOOSE MOUNTINGS OR CONNECTIONS	3.39	62	79
O56 REMOVE OR INSTALL WIRE HARNESSSES, CABLES, OR CONNECTOR PLUGS	3.39	67	84
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	3.03	62	86
F17 CLEAN SOLDERING IRONS	2.71	61	85
F45 STRIP ELECTRICAL WIRES	2.21	62	84
F6 CLEAN AIR FILTERS	2.08	63	90
F19 CLEAN UP SHOPS	1.95	70	86

TABLE 20

## JOB DIFFICULTY INDICES FOR SPECIALTY JOB GROUPS

<u>GROUPS</u>	<u>JOB DIFFICULTY INDEX *</u>
I. OPERATOR MAINTAINERS (GRP045, N=166)	15.2
II. SHIFT SUPERVISORS (GRP040, N=10)	11.4
III. MINOR MAINTENANCE AND OPERATION PERSONNEL (GRP036, N=11)	7.9
IV. NCOIC, TRCOS, AND SPECIAL TECHNICAL PERSONNEL (GRP010, N=49)	11.4
V. TRAINING PERSONNEL (GRP018, N=8)	9.7

\* AVERAGE DIFFICULTY - 13.0

## COMPARISON OF AFR 39-1 SPECIALTY DESCRIPTIONS WITH SURVEY DATA

The AFR 39-1 specialty descriptions for AFSCs 34136, 34156, and 34176 were compared against the survey data. Both specialty descriptions appear to be complete, and accurately portray the duties and responsibilities of the personnel in this career ladder. All the duties and responsibilities mentioned in the specialty descriptions could be matched to tasks in the job inventory, and sufficient numbers of survey respondents were found performing those functions to warrant their inclusion in the descriptions.

A discussion concerning the commonalities of the job descriptions for all the ladders in the Training Devices career field is included in the Career Field Addendum to this report.



## COMPARISON OF THE SPECIALTY TRAINING STANDARD (STS) WITH SURVEY RESULTS

A review of the current STS 341X6, dated November 1977, was made for the 3-, 5-, and 7-skill levels. Each of the STS subparagraphs containing task knowledge or performance requirements were compared to the survey results. Subparagraphs containing only general information or subject knowledge proficiency level requirements were not evaluated.

Overall the STS appears to be up to date and complete in providing general training requirements. The STS subparagraphs evaluated were supported by survey data. However, many subparagraphs were subject knowledge oriented making much of the STS difficult to compare to survey data. A comparison of specialty training standards across the career field is included in the Career Field Addendum attached to this report.

## COMPARISON OF CURRENT SURVEY TO PREVIOUS SURVEY

A previous survey of this career ladder was conducted in March 1974. At that time both the AFS 342X0, Flight Simulator career ladder, and the AFS 343X0, Navigation/Bomb/Tactics Trainer career ladder, were surveyed in conjunction with one another and the results compared. Then in April 1976, contrary to the survey data but at the recommendation of the Mission Simulator Support Requirements Working Group held at Chanute AFB, Illinois in June 1974; the two career ladders were split forming the AFS 341X3, AFS 341X4, AFS 341X5, and 341X6 career ladders. The AFSC split along analog and digital simulator systems has, therefore, made it very difficult to compare each of the current individual career ladders with the results of the previous survey. Thus, a comparison of the results of all four of these career ladders has been made to the results of the previous survey and is included in the Career Field Addendum.

## SUMMARY OF BACKGROUND INFORMATION

### Assignment to Career Ladder

Fifty-eight percent of the AFS 341X6 survey respondents indicated they were initially assigned to the career ladder after completing resident technical training. Another 28 percent were retrainees who attended resident technical training and four percent entered the career ladder through conversion from another Air Force specialty without training. Five percent responded that they entered the career ladder by other than normal classification methods.

### Relative Job Satisfaction

Table 21 displays the various percentages by AFMS groups of the responses to questions regarding job interest and perceived utilization of talents and training. In order to provide a better understanding of these figures, comparisons with individuals in mission equipment maintenance AFSCs surveyed in 1977 are also included by AFMS groups. These comparative AFSCs include such specialties as communications electronics systems, avionics systems, missile maintenance and aircraft maintenance.

Eighty-eight percent of AFS 341X6 first enlistment respondents found their job interesting. This is considerably higher than the 62 percent average reported for this enlistment group in the 1977 comparative studies. Their perceived utilization of talents is also well above the comparative average, but their perceived utilization of training is somewhat below that reported by first enlistment personnel in the comparative sample.

The second enlistment personnel also display extremely high job interest and a utilization of talents above that reported by their counterparts surveyed in 1977. However, their perceived utilization of training, like that of the first enlistment group, is below that of the comparative group.

Career airmen showed a job interest level that, while it was above the comparative sample, was below that of first or second enlistment personnel from the survey sample. Their perceived utilization of talents was also below that of the other enlistment groups in the survey and below that of the comparative sample as well. Finally, this group's perceived utilization of training was considerably below that of the comparative group, although, more in line with the other enlistment groups in the survey.



### Reenlistment Intentions

The expressed intentions toward reenlistment by AFS 341X6 survey respondents are displayed in Table 22. Despite the high job interest of the members in this career ladder, reenlistment intentions were below those of the comparative sample in all three enlistment groups.

TABLE 21

EXPRESSION OF JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS AND TRAINING  
BY 341X6 TAFMS GROUPS  
(PERCENT RESPONDING)

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	341X6	COMPARATIVE AFSCs*	341X6	COMPARATIVE AFSCs*	341X6	COMPARATIVE AFSCs*
<u>I FIND MY JOB</u>						
NO REPLY	-	-	-	-	1	-
EXTREMELY DULL TO FAIRLY DULL	9	17	2	12	9	9
SO-SO	3	21	4	16	7	11
FAIRLY INTERESTING TO EXTREMELY INTERESTING	88	62	94	72	83	80
<u>MY JOB UTILIZES MY TALENTS</u>						
NO REPLY	-	-	-	-	2	-
NOT AT ALL OR VERY LITTLE	19	32	18	21	18	14
FAIRLY WELL TO VERY WELL	70	64	75	71	64	68
EXCELLENTLY TO PERFECTLY	11	4	7	8	16	18
<u>MY JOB UTILIZES MY TRAINING</u>						
NO REPLY	-	-	-	-	-	-
NOT AT ALL OR VERY LITTLE	30	26	27	22	28	18
FAIRLY WELL TO VERY WELL	68	67	69	68	61	63
EXCELLENTLY TO PERFECTLY	2	7	4	10	11	19

\* BASED ON A SUMMARY OF OVER 21,800 RESPONSES FROM MISSION EQUIPMENT MAINTENANCE AFSCs  
SURVEYED IN 1977.

TABLE 22

REENLISTMENT INTENTIONS OF AFS 341X6 PERSONNEL  
(PERCENT RESPONDING)

<u>REENLISTMENT INTENTIONS</u>	<u>FIRST ENLISTMENT</u>	
	<u>341X6</u>	<u>COMPARATIVE AFSCs*</u>
NO REPLY	-	-
NO	39	34
UNCERTAIN, PROBABLY NO	23	27
UNCERTAIN, PROBABLY YES	24	26
YES	14	13

	<u>SECOND ENLISTMENT</u>	
	<u>341X6</u>	<u>COMPARATIVE AFSCs*</u>
NO REPLY	7	-
NO	18	17
UNCERTAIN, PROBABLY NO	20	18
UNCERTAIN, PROBABLY YES	27	33
YES	28	32

	<u>CAREER</u>	
	<u>341X6</u>	<u>COMPARATIVE AFSCs*</u>
NO REPLY	2	-
NO	13	20
UNCERTAIN, PROBABLY NO	14	8
UNCERTAIN, PROBABLY YES	15	16
YES	56	56

\* BASED ON A SUMMARY OF OVER 21,600 RESPONDENTS FROM MISSION  
EQUIPMENT MAINTENANCE AFSCs SURVEYED IN 1977.



## IMPLICATIONS

In the analysis of the survey data, it was found that the Digital Navigation/Tactics Training Devices career ladder was composed of relatively homogeneous jobs and fairly satisfied individuals who operate and maintain digital navigation/tactics training devices. However, as pointed out in the Career Field Addendum, there is a very high degree of commonality in the tasks performed by this career ladder's personnel and that of Defensive System Trainer (AFS 341X2) personnel, Analog Flight Simulator (AFS 341X3) personnel; Digital Flight Simulator (AFS 341X4) personnel; and Analog Navigational/Tactics Training Devices (AFS 341X5) personnel. There certainly appears, based on the survey data, that fewer than the previous number of career ladders could be organized to operate and maintain these various trainer systems. This is especially true in light of the fact that analog trainers are gradually being phased out of the Air Force inventory and replaced with the more advanced digital trainers. In addition, as reported in the Implications section of the Career Field Addendum, 5-skill level AFS 341X4 personnel overseas were found to be performing the primary tasks and duties of the Digital Navigation/Tactics Training Devices career ladder.

Solutions to problems facing this specialty as it expands with the modernization of the Air Force's training devices will not be arrived at easily, but career ladder managers should carefully consider the data presented in this report and the accompanying Career Field Addendum when planning the future of the Digital Navigation/Tactics Training Devices career ladder.

**AFS 341XX**  
**CAREER FIELD ADDENDUM**

**Atch 1**

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## SUMMARY OF RESULTS

1. Survey Coverage: Inventory booklets were administered to all 2,480 incumbents assigned to the Training Devices career field during the period December 1977 through April 1978. Survey results are based on responses from 1,886 airmen or 76 percent of the assigned career field population.
2. Career Field Structure: Four major groups of jobs were found within the career field. The operation and maintenance group contained 13 subgroups. These were differentiated by the number and kinds of tasks performed, the type of equipment maintained, and the percent of time spent performing various maintenance and supervisory duties. The remaining three groups were composed of personnel assigned as supervisors and managers, formal training personnel, and airmen performing primarily as instrument trainer instructors.
3. DAFSC Differences: Jobs performed by 3- and 5-skill level incumbents were fairly homogeneous. They consisted of tasks relating to performing preventive maintenance, operating training devices, and removing or replacing system components. However, 5-skill level airmen perform a higher average number of tasks than typical 3-skill level airmen. DAFSC 3417X personnel were less homogeneous due to the diversity of technical tasks performed. While functioning as supervisors, they still spend a majority of their time performing technical tasks and duties. DAFSC 34197 personnel are clearly the managers in this career field.
4. Similarities and Differences In Task Performance: There is a great deal of similarity among maintainers in all career ladders in the areas of operating training devices, performing preventive maintenance, and in performing general malfunction isolation procedures. There are also distinct differences between instrument trainer instructor operators and the other ladders; equipment maintainers. In addition, each ladder is different from the others in operation and maintenance of career ladder unique equipment.
5. AFR 39-1 Review: Specialty descriptions were found in general to be accurate depictions of career ladder duties and responsibilities. However, there is considerable commonality among these specialty descriptions, differentiated mainly through the highlighting of equipment unique to each ladder.
6. STS Review: The first 10 paragraphs of each STS in the career field are essentially the same. There is additional commonality in STS paragraphs among the career ladders responsible for operating and maintaining aircrew training devices.

CAREER FIELD ADDENDUM  
TRAINING DEVICES CAREER FIELD  
(AFSCs 341X1, 341X2, 341X3, 341X4, 341X5, 341X6, 341X7, AND 34192)

INTRODUCTION

The principle purpose of constructing a comprehensive job inventory for the Training Devices career field was to provide data in a format that would allow an in-depth analysis of similarities and differences across all the specialties within the career field. Such an analysis was performed and is contained in this addendum which is attached to each Training Devices career ladder Occupational Survey Report.

A great deal of Major Air Command and Air Staff interest exists concerning the collapse of career ladders within the Training Devices career field to create fewer, easier to manage, less expensive to train career specialties. This report is therefore designed to display the survey data in a manner that would facilitate personnel managers in making decisions concerning the future of the career field structure. This report will include: (1) the job structure found within the career field and the relation to skill level and experience level groups; (2) a discussion of the similarities and differences among career ladders; (3) background data relative to job satisfaction; and (4) an analysis of the DAFSC 34197 skill level personnel.

SURVEY SAMPLE

Personnel were selected to participate in this survey so as to insure a balanced representation across MAJCOM and DAFSC groups. A sufficient response was achieved from all career ladders in the Training Devices career field so that the desired comparisons could be made. Table 1 reflects the percentage distribution, by career ladder, of assigned personnel in the AFS 341XX career field as of March 1978, and the distribution of incumbents in the final survey sample. The 1,886 respondents making up the final sample represent 76 percent of the 2,480 members making up the total Training Devices career field. Thirty-two individuals (or 2 percent of the total sample) did not indicate their specific ladder and are shown only with the generic 341XX specialty code. This error rate is within acceptable limits and is not considered a serious problem for data analysis.

Table 2 reflects the distribution, by major command, of assigned personnel with DAFSC 34197 as of March 1978, as well as the distribution of incumbents in the final survey sample. The 102 respondents making up the final sample represent 61 percent of the 168 members assigned as Training Devices Superintendents.

TABLE 1  
DISTRIBUTION OF CAREER FIELD SURVEY SAMPLE BY CAREER LADDER

CAREER LADDER	TOTAL ASSIGNED	TOTAL IN SAMPLE	PERCENT OF LADDER SAMPLE	PERCENT OF TOTAL SAMPLE
341X1 INSTRUMENT TRAINER	262	185	71%	10%
341X2 DEFENSIVE SYSTEM TRAINER	174	137	79%	7%
341X3 ANALOG FLIGHT SIMULATOR	596	483	81%	26%
341X4 DIGITAL FLIGHT SIMULATOR	531	415	78%	22%
341X5 ANALOG NAVIGATION/TACTICS TRAINING DEVICES	235	159	68%	8%
341X6 DIGITAL NAVIGATION/TACTICS TRAINING DEVICES	396	277	70%	15%
341X7 MISSILE TRAINER	118	96	85%	5%
34197 TRAINING DEVICES SUPERINTENDENT	168	102	61%	5%
341XX (DAFSC NOT INDICATED)		32		2%
TOTAL	2480	1886	76%	100%



TABLE 2

**COMMAND REPRESENTATION IN THE SURVEY SAMPLE OF  
DAFSC 34197 PERSONNEL**

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
SAC	33	33
TAC	27	26
MAC	13	16
ATC	13	10
USAFE	5	7
PACAF	4	3
ADC	3	3
OTHER	2	2
<b>TOTAL</b>	<b>100</b>	<b>100</b>

TOTAL ASSIGNED - 168  
 TOTAL SAMPLED - 102  
 PERCENT OF SAMPLE - 61%

## CAREER FIELD STRUCTURE

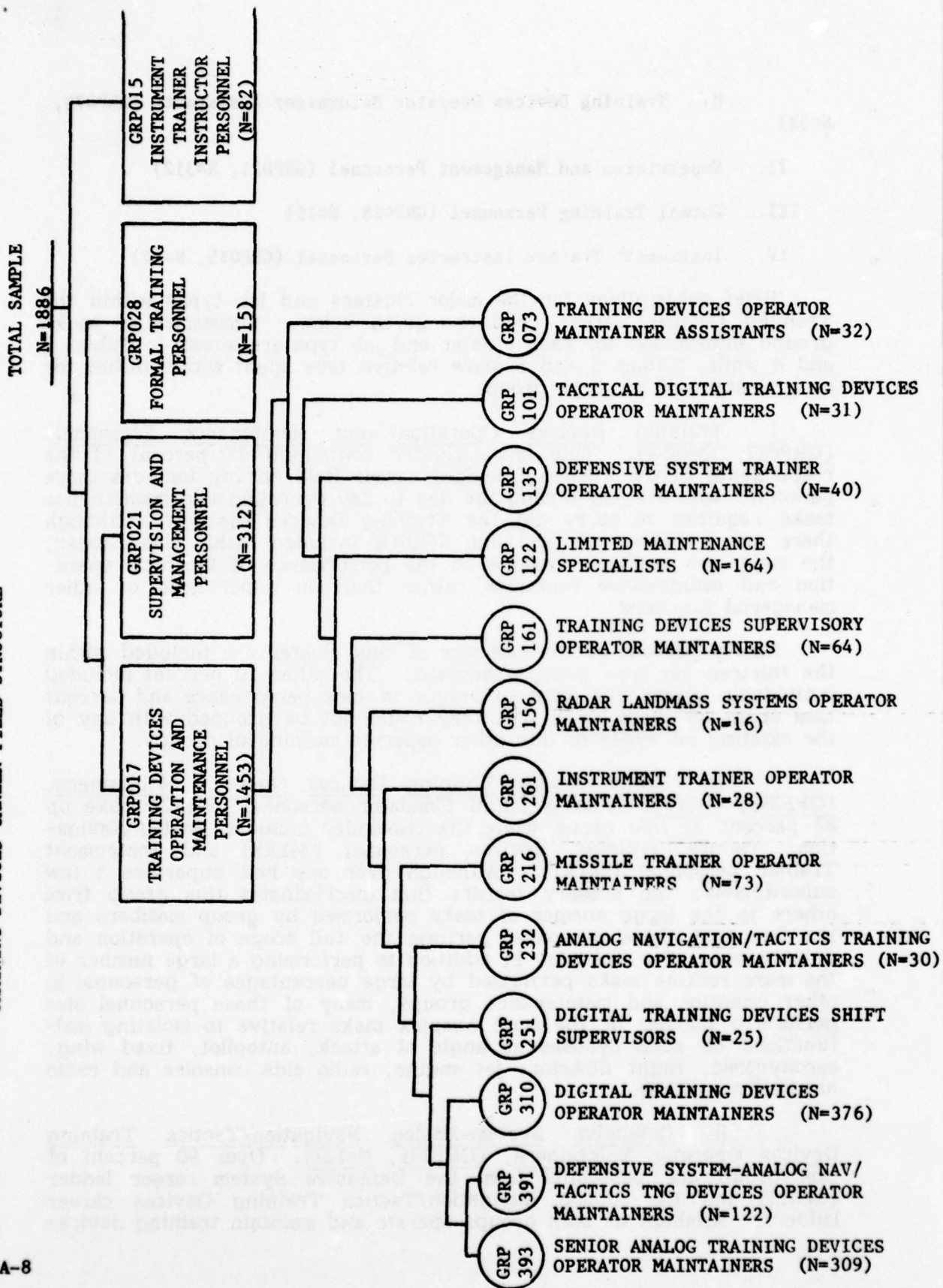
An analysis of the career field structure was conducted by using the Comprehensive Occupational Data Analysis Programs (CODAP), as described in the career ladder section in the main body of this report. In fact, the career ladder structures were extracted from the career field structure diagram with the exception of AFS 341X4 and AFS 341X6. Because of their high degree of task similarity, these specialties did not cluster independently, thus requiring separate cluster diagrams in order to perform complete career ladder analyses.

Based on task similarity and relative percent time spent, the most realistic division of the jobs performed in the 341XX career field is illustrated in Figure 1. These job clusters and job types are listed below. The GRP number shown beside each title is a reference to computer print out information included for use by classification and training officials.

- I. Training Devices Operation and Maintenance Personnel  
(GRP017, N=1,453)
  - A. Senior Analog Training Devices Operator Maintainers  
(GRP0393, N=309)
  - B. Defensive System - Analog Navigation/Tactics Training  
Devices Operator Maintainers (GRP391, N=122)
  - C. Digital Training Devices Operator Maintainers  
(GRP310, N=376)
  - D. Digital Training Devices Shift Supervisors (GRP251, N=25)
  - E. Analog Navigation/Tactics Training Devices Operator  
Maintainers (GRP232, N=30)
  - F. Missile Trainer Operator Maintainers (GRP216, N=73)
  - G. Instrument Trainer Operator Maintainers (GRP261, N=28)
  - H. Radar Landmass Systems Operator Maintainers (GRP156, N=16)
  - I. Training Devices Supervisory Operator Maintainers  
(GRP161, N=64)
  - J. Limited Maintenance Personnel (GRP122, N=164)
  - K. Defensive System Trainer Operator Maintainers (GRP135,  
N=40)
  - L. Tactical Digital Training Devices Operator Maintainers  
(GRP101, N=31)

FIGURE 1

TRAINING DEVICES CAREER FIELD STRUCTURE





M. Training Devices Operator Maintainer Assistants (GRP073, N=32)

II. Supervision and Management Personnel (GRP021, N=312)

III. Formal Training Personnel (GRP028, N=15)

IV. Instrument Trainer Instructor Personnel (GRP015, N=82)

Brief descriptions for the major clusters and job types within the Training Devices Career Field are given below. Summaries of background information for each cluster and job type are shown in Tables 3 and 4 while, Tables 5 and 6 show relative time spent within duties for each cluster and job type group.

I. Training Devices Operation and Maintenance Personnel, (GRP017, N=1453). This large cluster containing 77 percent of the respondents to the Training Devices career field survey includes those personnel who are performing the day to day operation and maintenance tasks required to carry out the Training Devices mission. Although there are a number of first line NCOICs included within this cluster, the major job emphasis remains on the performance of technical operation and maintenance functions rather than on supervision or other managerial functions.

Ninety percent of the members of this cluster are included within the thirteen job type groups reported. The other 10 percent included individuals whose jobs were so unique in task performance and percent time spent on those tasks that they could not be grouped with any of the existing job types or into other separate meaningful groups.

A. Senior Analog Training Devices Operator Maintainers, (GRP393, N=309). Analog Flight Simulator personnel (341X3) make up 82 percent of this group while the remainder includes Analog Navigation/ Tactics Training Devices personnel (341X5) and Instrument Trainer personnel (341X1). Although over one half supervise a few subordinates, the primary feature that discriminates this group from others is the large number of tasks performed by group members and the fact that these personnel perform the full scope of operation and maintenance. For example, in addition to performing a large number of the more routine tasks performed by large percentages of personnel in other operator and maintenance groups, many of these personnel also perform a number of the more complex tasks relative to isolating malfunctions on such systems as angle of attack, autopilot, fixed wing, aerodynamic, flight director, jet engine, radio aids consoles and radio navigation systems.

B. Defensive System-Analog Navigation/Tactics Training Devices Operator Maintainers, (GRP391, N=122). Over 90 percent of this group are personnel from the Defensive System career ladder (341X2) and the Analog Navigation/Tactics Training Devices career ladders. Members of both groups operate and maintain training devices

which involve similar principles of operation. While this group performs many of the same general operator and maintenance tasks as many of the other groups, these personnel tend to be more involved in maintenance of T1, T4 and T10 trainers. Some of the tasks which are relatively exclusive to this group include isolation of malfunctions on doppler systems, timing systems, radio navigation systems, comparators, and composite video signals. In addition, approximately one third of this group adjust multi-channel tape recorders, phasing, radar display units, T-10 terrain data signal generators and target intensity. These tasks were performed by very few of the members of other groups in the career field structure analysis.

C. Digital Training Devices Operator Maintainers, (GRP310, N=376). This relatively large group contains personnel who operate and maintain digital training devices. Sixty percent are from the Digital Flight Simulator career ladder (341X4) while 35 percent are from the Digital Navigation/Tactics Training Devices career ladder (341X6). Although a few of these individuals serve as shift chiefs and perform a number of first level supervisory tasks, the primary purpose of personnel in this group is to accomplish the day-to-day operation and maintenance of digital training devices.

Within this job type there appeared to be no real differences between the jobs performed by AFS 341X4 personnel and AFS 341X6 personnel. In fact, a review of the grouping process indicates that 341X4 and 341X6 personnel within the same organizations perform essentially the same jobs.

D. Digital Training Devices Shift Supervisors, (GRP251, N=25). This small group, like the preceding group is composed primarily of 341X4 and 341X6 personnel. Again, there appears to be no specific grouping by ladder. These personnel, perform somewhat fewer tasks than the preceding group and in addition spend considerably more time on supervisory functions. Characteristically members of this group are 7-skill level and call themselves Shift Chiefs but spend a majority of their time on the technical operation and maintenance tasks.

E. Analog Navigation/Tactics Training Devices Operator Maintainers (GRP232, N=30). Members of this group are primarily Analog Navigation/Tactics Training Devices personnel (341X5) and are engaged in operation and maintenance of analog navigation/tactics training devices for T-10, C-5A or C-141 trainers. A small percentage also operate or maintain navigation/tactics training devices for B-52 simulators. Although forty percent of these personnel supervise and many work as section chiefs or shift supervisors, their primary functions are the operation and maintenance of training devices.

Members of this group perform fewer tasks than those of preceding groups. Most of these tasks are the normal routine functions common to other groups. However, a few unique tasks were performed by substantial percentages of these personnel. These included the operation of closed circuit T.V. systems and digital readout units

(DROS), the isolation of malfunctions and removal or installation of parts of closed circuit simulators or visual attachments, and the operation of digital computers and control panels.

F. Missile Trainer Operator Maintainers (GRP216, N=73). Seventy-one members (97 percent) of this group are missile trainer personnel (341X7). These individuals perform a large number of tasks including many of those general operation and maintenance tasks common to most personnel in this career field. In addition, they perform those tasks unique to missile trainers including the duties of operating missile procedures trainers and the isolation of malfunctions on missile procedures trainers. A more detailed discussion of this group can be found in the Career Ladder Structure section of the Missile Trainer Career Ladder Occupational Survey Report, AFS 341X7, under the Missile Procedures Trainer Maintainers Group (SPL750).

G. Instrument Trainer Operator Maintainers (GRP261, N=28) The 28 members of this group are all members of the Instrument Trainer career ladder, 341X1. These personnel spend approximately 38 percent of their time performing instrument trainer instructor and operation tasks. In addition, 47 percent of their time is spent maintaining the instrument trainer and associated equipment. Although this group is primarily concerned with the performance of technical tasks, slightly over one third also serve as supervisors of small units or as shift chiefs.

H. Radar Landmass Systems Operator Maintainers (GRP156, N=16). This group is made up of personnel from the 341X4 (38 percent) and 341X6 (62 percent) career ladders. Fifty-six percent of these personnel (including personnel from both ladders) are assigned to SAC, operating and maintaining FB-111 mission simulators. The remainder work in TAC organizations and are operating and maintaining simulators for F-4E and F-111 aircraft. Tasks which are unique to this group include: adjust landmass gantry drive systems; remove or install radar scopes; and isolate malfunctions on attack radar systems, CPUS radar landmass systems, and target generation systems. In addition, personnel from this group also perform a variety of other general operation and maintenance tasks common to other operator maintainers within the Training Devices career field.

I. Training Devices Supervisory Operator Maintainers (GRP161, N=64). This group is composed primarily of 7-skill level personnel who in addition to performing supervisory and administrative tasks also perform operator and maintenance tasks for over 50 percent of their work time. Personnel from all of the Training Devices career ladders were found in this group. However, over 50 percent were from the Analog Flight Simulator career ladder (341X3). A majority of this group were in SAC and MAC, but ADC, TAC and ATC were also represented. Primarily tasks from supervisory duties formed the basis for the grouping of these personnel. These included such tasks as, direct shop housekeeping, assign work priorities, make entries on simulator maintenance forms, counsel personnel on personal or military related



problems, and prepare APRs. Also a number of general preventive maintenance tasks were performed by high percentages of the group indicating a day-to-day involvement in the actual maintenance function. These included; visually inspect test equipment for serviceability; visually inspect electrical systems, wire harness, cables, or connector plugs; and physically check for loose mountings or connections. Several simulators were maintained by personnel in this group, however the most common included the KC-135, maintained by 23 percent of the group; the T-1, maintained by 19 percent and the T-4 maintained by 22 percent. Smaller percentages maintained simulators for the B-52, the C-130 or F-106 aircraft.

J. Limited Maintenance Specialists (GRP122, N=164). Members of this group characteristically are in their first enlistment, are 3- or 5-skill level and have an average of only 27 months in the training device career field. Approximately three-fourths of these personnel are from the Analog Flight Simulator career ladder. The remainder include small numbers of personnel from the other ladder in this career field. These personnel perform a variety of tasks which are common to most simulator operation and maintenance functions, but require only minor specialized knowledges of their specific simulator in order to perform them.

K. Defensive System Trainer Operator Maintainers (GRP135, N=40). All but two of this group are from the Defensive System Trainer (341X2) career ladder. These personnel are primarily 5-skill level airmen who average slightly over five years average experience in the career ladder. Tasks which are common to large percentages of the members of this group are primarily the general preventive maintenance and remove and replace tasks which are common to most operator maintenance personnel within this career field. Some operator tasks however, which were somewhat unique to this group were operate flight director controls, fire control radars, graphic display units, and ground track recorders. Thirty percent or more of this group also isolated malfunctions on a variety of systems which were maintained by few members of other groups. These included signal analyzer ECM systems, simulated automatic and manual jamming systems, chaff dispenser ECM systems and flare ECM systems. In addition, approximately one third adjust fire control systems, and multi-channel tape recorders, tasks performed by very few personnel in other groups.

L. Tactical Digital Training Devices Operator Maintainers (GRP101, N=31). This rather heterogeneous group is made up of 18 Digital Flight Simulator and 13 Digital Navigation/Tactics Training Devices personnel. Most of these personnel operate and maintain simulators for tactical aircraft such as the F-4E, F-111F and F-15A. In addition to performing a variety of general operation and maintenance tasks common to most other operator maintainer groups, there were several operator tasks performed by higher percentages of this group than any other group within the career field. Typical examples of these included operating instructor consoles (87 percent), operating digital computer control panels (87 percent), setting up ground targets

(71 percent), operating digital radar landmass systems (64 percent), serving as ground crew during simulator missions (58 percent), and operating armament systems (45 percent). Also included within this group were four airmen from SAC who were assigned as command development technicians.

M. Training Devices Operator Maintainer Assistants (GRP073, N=32). This is a very heterogeneous grouping of training devices personnel who perform a variety of general operating and maintenance tasks which are common to most of the other groups within the career field. Fifty-six percent of these airmen are from the 341X4 career ladder while twenty-eight percent are 341X6 personnel. The remainder are from the 341X1, 341X3 and 341X5 career ladders.

These personnel have the least time in military service and experience in the career field of any of the career field groups. All work in organizations within the CONUS.

II. Supervision and Management Personnel (GRP021, N=312). In addition to 95 of the 102 Training Devices Superintendents responding to the survey, this group includes a number of 7-skill level personnel performing high level supervisory, management or special technical functions within the career field. From the standpoint of tasks performed, the jobs identified within this cluster are very heterogeneous. Few tasks are common to 70 percent or more of this group. This is understandable considering the different kinds of jobs represented by this group. The majority of these personnel (68 percent) serve as supervisors in such positions as Training Devices Superintendent or Branch Chief, positions where their primary function is the supervision of the operation and maintenance of training devices for air crew training. The remainder are involved in a number of specialized support or management type jobs. Examples of some of these include Training Development Team members, MAJCOM Training Devices Representatives; Quality Control Inspectors, Maintenance and/or Supply Coordinators, and Technical Representatives of the Contracting Office (TRCOs). It was interesting to note that a majority of the Training Development Team technicians were from either the Digital Flight Simulator or the Digital Navigation/Tactics Training Devices career ladders. This may be indicative of the increasing emphasis on digital technology in the design and development of new training devices within the field.

III. Formal Training Personnel (GRP028, N=15). This small cluster of 15 personnel was primarily composed of technical school instructors teaching in the basic courses at Chanute AFB. Characteristically members of this group performed very few tasks, almost all of which were specifically related to the conduct of classroom training such as developing curricula or plans of instruction, writing test questions, evaluating progress of trainees, counseling trainees, demonstrating operation of equipment and administering or scoring tests. Although most individuals also performed a few equipment operation and maintenance tasks, these were often unique to the particular portion of the course taught and not common to other personnel in this

group. Although there were a number of other training instructor personnel included within the occupational survey, this cluster was the only group in which instructor tasks were preponderant and characterized the job. Since instructors normally perform a number of operator and maintenance tasks as a part of, or in addition to their instruction, many of these airmen grouped with personnel who operated and maintained the same type of equipment in the field as that taught in the classroom. This is especially true of those Field Training Detachment (FTD) instructors maintaining operational training devices at Vandenberg AFB and Castle AFB.

IV. Instrument Trainer Instructor Personnel (GRP015, N=82). This group contains only personnel in the Instrument Trainer career ladder and are described in detail in the AFS 341X1 Occupational Survey Report.

#### Summary

The clustering analysis of this career field revealed four distinctly different kinds of jobs. Two major clusters containing almost 94 percent of the survey respondents included those airmen who operate and maintain training devices as their primary job and the supervisors or managers of training devices functions. The other two small clusters contained those members of the Instrument Trainer career ladder who served as Instrument Trainer Instructors and personnel who planned and or conducted formal training for training devices personnel.

Characteristically, operation and maintenance personnel in this career field perform a rather large number of tasks that are common to all career ladders. These are general preventive maintenance, operating, isolating malfunctions, and removing and replacing components of units. These common tasks tend to group personnel from all of the ladders and was a major factor in the career field structuring process. Other factors which were instrumental in the grouping process included the degree of supervision exercised, the kind of computers (digital or analog) operated and maintained, and the number of tasks performed.

A review of the group job descriptions and background information within the training devices operation and maintenance cluster reveals that several of these groups contained rather large percentages of two or more career ladders. For example, the Senior Analog Training Devices Operator Maintainers was composed at 12 percent of respondents from the 341X1 ladder, 52 percent of 341X3 ladder respondents, and 17 percent of 341X5 ladder respondents. Airmen in the Defensive Systems-Analog Navigation/Tactics Training Devices Operator Maintainer group were from the 341X2 and the 341X5 ladders. While the Digital Training Devices Operator Maintainers group contained 54 percent of 341X4 respondents and 48 percent of 341X6 respondents. The other operator maintainer groups were made up primarily of personnel from one ladder, except in supervisory groups where supervisory tasks were the primary grouping factors and in the limited performance groups where performance was limited to a small number of routine operation and maintenance tasks common to most ladders.



TABLE 3

PERCENT TIME SPENT ON DUTIES BY CLUSTER GROUPS WITHIN THE TRAINING DEVICES CAREER FIELD  
(PERCENT MEMBERS PERFORMING)

DUTIES	TRAINING DEVICES OPER & MAINT PERSONNEL	SUPERVISION & MAINT PERSONNEL	FORMAL TRAINING PERSONNEL	INSTRUMENT TRAINER INS' PERSONNEL
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>				
A ORGANIZING AND PLANNING	1	17	3	2
B DIRECTING AND IMPLEMENTING	4	26	9	4
C INSPECTING AND EVALUATING	2	23	6	2
D TRAINING	2	9	56	5
<u>ADMINISTRATIVE FUNCTIONS</u>				
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA	4	8	2	1
<u>TECHNICAL FUNCTIONS</u>				
F PERFORMING PREVENTIVE MAINTENANCE	14	3	2	1
G OPERATING TRAINING DEVICES	12	4	6	27
H OPERATING MISSILE PROCEDURES TRAINERS	*	*	0	*
I ISOLATE MALFUNCTIONS ON COMPUTERS AND PERIPHERAL EQUIPMENT	3	1	3	*
J ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS AND PERIPHERAL EQUIPMENT	4	*	*	*
K ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH ANALOG COMPUTERS	2	*	*	*
L ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH DIGITAL COMPUTERS	2	*	*	*
M ISOLATE MALFUNCTIONS ON SIMULATOR AND COMPUTER COMPONENTS	6	2	3	*
N ISOLATE MALFUNCTIONS ON MISSILE PROCEDURE TRAINERS	*	*	*	*
O REMOVING OR REPLACING COMPONENTS OR SYSTEM UNITS	17	*	*	*
P ALIGNING AND ADJUSTING SIMULATOR SYSTEMS OR COMPONENTS	9	*	1	*
Q PERFORMING IN-SHOP MAINTENANCE	6	*	1	*
R PERFORMING INSTRUMENT TRAINER INSTRUCTION FUNCTIONS	2	*	3	53
S MAINTAINING MOBILE AIRCREW TRAINING DEVICES	*	*	0	*
T PERFORMING OPERATIONAL CHECKS	5	1	*	*
U MAINTAINING MISCELLANEOUS EQUIPMENT	2	*	1	*

\* INDICATES LESS THAN ONE PERCENT

TABLE 4

PERCENT TIME SPENT ON DUTIES BY JOB TYPE GROUPS WITHIN THE TRAINING DEVICES CAREER FIELD

DUTY	SR ANALOG		DEF SYS		DIGITAL		ANALOG		MISSILE		INST TRNR		RADAR		TRNG DEV		LMTD		DEF SYS		TACTICAL		TRNG DE	
	TRNG DEV	OPR MTR	NAV/TACT	OPR MTR	TRNG DEV	SHIFT	TRNG DEV	NAV/TACT	TRNR	OPR MTR	OPR MTR	TRNR	SYS	OPR MTR	SUPV	OPR MTR	MAINT	PERSNL	OPR MTR	TRNG DEV	OPR MTR	TRNG DEV	OPR MTR	ASST
A	1	2	4	1	2	4	1	2	2	2	2	2	*	7	7	*			1	1	1	1	*	
B	3	4	11	3	5	11	3	5	5	4	4	4	2	14	14	2	2	2	3	3	3	3	1	1
C	2	2	6	1	3	6	1	3	3	2	2	2	*	9	9	1	1	1	2	2	2	2	*	*
D	2	2	7	2	3	7	2	3	3	3	3	3	2	7	7	1	1	1	1	1	2	2	1	1
E	3	4	5	4	5	5	4	5	5	4	4	4	3	7	7	4	4	4	4	4	4	4	6	6
F	14	13	10	16	14	10	16	14	14	13	13	13	12	10	10	22	22	22	17	13	13	13	20	20
G	9	9	9	10	8	9	10	8	8	14	14	14	14	5	5	9	9	9	12	35	35	35	22	22
H	*	1	*	*	6	*	*	6	6	*	*	*	*	*	*	1	1	1	*	1	1	1	1	1
I	2	3	2	2	5	2	2	5	5	1	1	1	5	2	2	1	1	1	2	2	2	2	2	2
J	5	3	5	2	2	5	2	2	2	3	3	3	5	3	3	4	4	4	3	4	4	4	3	3
K	5	2	*	2	*	*	2	*	*	1	1	1	2	2	3	4	4	4	2	2	*	*	1	1
L	*	2	4	1	*	4	1	*	*	1	1	1	7	1	1	1	1	1	2	3	3	3	3	3
M	5	8	8	7	6	8	7	6	6	3	3	3	9	4	4	4	4	4	6	6	5	5	7	7
N	*	*	*	*	5	*	*	5	5	5	5	5	*	*	*	*	*	*	0	*	*	*	*	*
O	19	20	12	22	15	12	22	15	15	9	9	9	17	10	10	21	21	19	19	10	10	15	15	
P	11	11	5	12	9	5	12	9	9	6	6	6	8	7	7	8	8	9	9	4	4	6	6	
Q	7	7	4	7	6	4	7	6	6	4	4	4	6	4	4	6	6	6	6	2	2	5	5	
R	1	*	1	*	*	1	*	*	*	24	24	24	*	1	1	1	1	1	*	*	2	2	1	1
S	2	*	*	*	0	*	*	0	0	0	0	0	*	1	1	2	2	*	*	*	*	3	3	
T	5	5	4	6	4	4	6	4	4	4	4	4	5	4	4	6	6	7	7	4	4	4	4	
U	2	2	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	3	3	3	3	3	3	3

(SEE TABLE 3 FOR DUTY TITLES)

TABLE 5

## BACKGROUND INFORMATION BY CLUSTER GROUPS WITHIN THE TRAINING DEVICES CAREER FIELD

	TRAINING DEVICES OPER & MAINT PERSONNEL GRP017	SUPERVISION & MAINT PERSONNEL GRP021	FORMAL TRAINING PERSONNEL GRP028	INSTRUMENT TRAINER INST PERSONNEL GRP015
AVERAGE NUMBER OF TASKS PERFORMED	222	93	33	67
JOB DIFFICULTY INDEX	13.7	11.4	9.5	10.6
AVERAGE PAYGRADE	4.3	6.7	5.3	4.3
PERCENT OF MEMBERS WHO SUPERVISE	32	68	13	22
AVERAGE MONTHS IN TRAINING DEVICES CAREER FIELD	53	153	91	66
AVERAGE MONTHS TOTAL ACTIVE MILITARY SERVICE	80	212	133	79
PERCENT MEMBERS IN FIRST ENLISTMENT	44%	1%	0%	46%
PERCENT OF CAREER LADDER SAMPLE IN EACH GROUP				
341X1	46%	10%		44%
341X2	85%	14%	0%	0%
341X3	93%	7%	*	0%
341X4	81%	16%	1%	0%
341X5	91%	9%	0%	0%
341X6	79%	18%	3%	0%
341X7	86%	13%	0%	0%
34197	4%	95%	0%	0%

\* INDICATES LESS THAN 1%



TABLE 6

## BACKGROUND INFORMATION BY JOB TYPE GROUPS WITHIN THE TRAINING DEVICES CAREER FIELD

	SR ANALOG			DEF SYS			DIGITAL			ANALOG			MISSILE			RADAR			TRNG DEV			LMTD			DEF SYS			TACTICAL			TRNG DEV		
	TRNG DEV	TRNG DEV	OPR MTR	ANALOG	NAV/TACT	OPR MTR	DIGITAL	TRNG DEV	SHIFT	CHIEFS	TRNG DEV	NAV/TACT	TRNG DEV	TRNG DEV	TRNG DEV	INST TRNR	LANDMASS	SYS OPR MTR	TRNG DEV	SUPV	OPR MTR	LMTD	MAINT	PERSNL	DEF SYS	OPR MTR	ASST	DIGITAL	TRNG DEV	OPR MTR	TRNG DEV	OPR MTR	ASST
AVERAGE NO. OF TASKS PERFORMED	262			248	301	215	154	230	199	153	212	124	124	93																			
JOB DIFFICULTY INDEX	14.9			15.1	16.8	15.5	11.6	14.2	13.8	13.0	14.4	8.5	7.4																				
AVERAGE PAYGRADE	4.3			4.3	4.4	5.9	4.6	3.9	4.6	4.4	5.7	3.6	3.6																				
PERCENT MEMBERS WHO SUPERVISE	37			34	29	80	40	33	39	31	84	11	9																				
AVC MOS IN TRNG DEVICES CR FLD	57			51	54	118	46	37	57	43	117	27	19																				
AVC MOS TAPNS	78			84	77	184	104	61	83	87	163	43	42																				
PERC MBRS IN 1ST ENLISTMENT	42%			46%	41%	0%	30%	63%	36%	50%	5%	87%	94%																				
PERC OF CAREER LADDER SAMPLE IN EACH GROUP																																	
341X1	12%			1%	0%	1%	0%	0%	15%	0%	3%	7%	1%																				
341X2	0%			41%	0%	0%	0%	0%	0%	0%	11%	2%	0%																				
341X3	52%			1%	1%	0%	0%	0%	0%	0%	7%	25%	0%																				
341X4	1%			*	54%	3%	0%	0%	0%	1%	*	2%	0%																				
341X5	17%			35%	2%	1%	18%	0%	0%	0%	2%	6%	0%																				
341X6	1%			1%	48%	2%	1%	0%	0%	4%	*	3%	0%																				
341X7	0%			1%	0%	0%	0%	0%	0%	0%	1%	0%	0%																				
34197	0%			2%	0%	0%	0%	0%	0%	0%	1%	0%	0%																				

\* INDICATES LESS THAN 1 PERCENT

## ANALYSIS OF DAFSC GROUPS

An analysis by DAFSC of the Training Devices career field was conducted in order that comparisons could be made of each career ladder sample against the total career field sample to determine similarities and differences by skill level. The DAFSC 34197 is included in this analysis because personnel holding the 9-skill level can be placed in positions of supervisory responsibility in any of the seven career ladders within the career field.

With the exception of the time spent by DAFSC 341X1 personnel in the area of performing instrument trainer instruction functions, career field DAFSC groups are quite similar to the DAFSC groups of each career ladder. Table 7 illustrates the relative percent of time spent by the skill level groups on the various duties listed in the job inventory. There is clearly a differentiation between the 3- and 5-skill level technical specialists and the 7- and 9-skill level supervisors. However, there is also a relatively high degree of homogeneity in the total sample, indicating that supervisors also perform technical functions. As Table 8 depicts, there are 23 technical tasks performed by 60 percent or more of the total career field sample.

### Skill Level Groups

As illustrated in the DAFSC analysis of each career ladder in the Training Devices career field, 3- and 5-skill level personnel are primarily technicians performing a majority of their time in three duty areas; performing preventive maintenance, operating training devices, and removing or replacing components or system units. Three-skill level personnel spend 52 percent of their time performing these duties while 5-skill level personnel spend 49 percent of their time on the same functions. There were 58 tasks performed by 50 percent or more of the 123 3-skill level respondents. Tasks performed by 67 percent or more of those airmen are listed in Table 9. The 5-skill level group is even more homogeneous. Ninety-three tasks are performed by 50 percent or more of the 1036 DAFSC 3415X respondents. Tasks performed by 70 percent or more of these airmen are listed in Table 10. As a review of the two tables shows many of the high performance tasks are performed by both 3- and 5-skill level airmen. There is more homogeneity of task performance displayed by the 5-skill level airmen but this is probably due to the larger average number of tasks performed and the experience level of the group rather than a distinct change in the type of jobs performed.

As a group, DAFSC 3417X personnel are less homogeneous than the 3- and 5-skill level groups. As shown in Table 11, tasks performed by large percentages of 7-skill level personnel tend to be supervisory and management in nature. However, only 40 percent of their time is spent performing technical duties. Since the tasks are more diverse, this creates a lower average of members performing for each task in the technical function areas. There is little doubt, though,

that 7-skill level airmen within this career field are performing more as technicians than as managers.

On the other hand, DAFSC 34197 personnel are clearly managers. Spending 86 percent of their time performing supervisory and management functions, these personnel comprise a homogeneous group of superintendents assigned to senior enlisted management positions across all the career ladders in the Training Devices career field. Typical tasks performed by DAFSC 34197 airmen are shown in Table 12. Eighty-eight percent of the members in this group indicated they were direct supervisors of personnel. Table 13 displays the various DAFSCs 9-skill level personnel supervise. It is important to note that the members of this group do have supervisory responsibility across the entire spectrum of DAFSCs in the Training Devices career field. Survey data also showed that there were members in this group that had progressed to the 9-skill level from each of the career ladders in the career field.



TABLE 7

## PERCENT TIME SPENT ON DUTIES BY DAFSC GROUPS

DUTIES		DAFSC 3413X (N=123)	DAFSC 3415X (N=1036)	DAFSC 3417X (N=593)	DAFSC 34197 (N=102)
<u>SUPERVISORY AND MANAGEMENT</u>					
A	ORGANIZING AND PLANNING	*	1	8	21
B	DIRECTING AND IMPLEMENTING	2	3	14	31
C	INSPECTING AND EVALUATING	1	1	11	26
D	TRAINING	1	2	7	8
<u>ADMINISTRATIVE FUNCTIONS</u>					
E	WORKING WITH FORMS, RECORDS, REPORTS DIRECTIVES, OR TECHNICAL DATA	4	3	6	5
<u>TECHNICAL FUNCTIONS</u>					
F	PERFORMING PREVENTIVE MAINTENANCE	18	14	8	2
G	OPERATING TRAINING DEVICES	16	14	8	1
H	OPERATING MISSILE PROCEDURES TRAINERS	1	1	*	*
I	ISOLATE MALFUNCTIONS ON COMPUTERS AND PERIPHERAL EQUIPMENT	3	3	3	1
J	ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS AND PERIPHERAL EQUIPMENT	4	4	2	*
K	ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH ANALOG COMPUTERS	2	2	1	*
L	ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH DIGITAL COMPUTERS	2	2	2	*
M	ISOLATE MALFUNCTIONS ON SIMULATOR AND COMPUTER COMPONENTS	5	6	5	1
N	ISOLATE MALFUNCTIONS ON MISSILE PROCEDURE TRAINERS	*	*	*	-
O	REMOVING OR REPLACING COMPONENTS OR SYSTEM UNITS	18	16	9	1
P	ALIGNING AND ADJUSTING SIMULATOR SYSTEMS OR COMPONENTS	7	9	6	1
Q	PERFORMING IN-SHOP MAINTENANCE	6	6	4	1
R	PERFORMING INSTRUMENT TRAINER INSTRUCTION FUNCTIONS	2	5	2	*
S	MAINTAINING MOBILE AIRCREW TRAINING DEVICES	1	1	*	*
T	PERFORMING OPERATIONAL CHECKS	5	5	3	1
U	MAINTAINING MISCELLANEOUS EQUIPMENT	2	2	1	*

\* INDICATES LESS THAN ONE PERCENT

TABLE 8

TASKS PERFORMED BY 60 PERCENT OR MORE OF DAFSC 341XX PERSONNEL  
(N=1,886)

TASKS	PERCENT MEMBERS PERFORMING
E11 MAKE ENTRIES ON SIMULATOR MAINTENANCE FORMS SUCH AS AFTO FORMS 349, 350, 359, 781, or 781A	77
G6 DOCUMENT DISCREPANCIES OF SIMULATOR PERFORMANCES	72
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	72
F50 VISUALLY INSPECT ELECTRICAL SYSTEMS	71
F60 VISUALLY INSPECT WIRE HARNESS, CABLES, OR CONNECTOR PLUGS	70
F54 VISUALLY INSPECT POWER SUPPLY SYSTEMS	69
F37 VISUALLY CHECK FOR LOOSE MOUNTINGS OR CONNECTIONS	68
F45 STRIP ELECTRICAL WIRES	68
F58 VISUALLY INSPECT VOLTAGE LEVELS, FREQUENCY VARIATIONS, OR CURRENT	67
F57 VISUALLY INSPECT TEST EQUIPMENT FOR SERVICEABILITY	65
O56 REMOVE OR INSTALL INDICATORS	65
F17 CLEAN SOLDERING IRONS	65
G6 DOCUMENT DISCREPANCIES OF SIMULATOR PERFORMANCES	64
F20 CONDUCT PERIODIC MAINTENANCE INSPECTIONS	64
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	64
F51 VISUALLY INSPECT ELECTRO-MECHANICAL DEVICES	62
P2 ADJUST AC OR DC SUPPLIES	62
O104 REMOVE OR INSTALL SOLDERED COMPONENTS SUCH AS TRANSISTORS RESISTORS OR CAPACITORS	61
O1 DISASSEMBLE SUBASSEMBLIES FOR REMOVAL OR REPLACEMENT OF COMPONENTS	61
F47 TEST ELECTRO-MECHANICAL COMPONENTS SUCH AS SYNCHROS RESOLVERS, POTENTIOMETERS, OR TRANSFORMERS	61
O44 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	61
F9 CLEAN HAND TOOLS OR SHOP EQUIPMENT	60
O57 REMOVE OR INSTALL INSTRUMENT KNOBS	60

TABLE 9  
REPRESENTATIVE TASKS PERFORMED BY DAFSC 3413X PERSONNEL  
(N=123)

TASKS	PERCENT MEMBERS PERFORMING
F19 CLEAN UP SHOPS	89
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	87
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	82
F17 CLEAN SOLDERING IRONS	80
F45 STRIP ELECTRICAL WIRES	80
F9 CLEAN HAND TOOLS OR SHOP EQUIPMENT	77
F37 PHYSICALLY CHECK FOR LOOSE MOUNTINGS OR CONNECTIONS	74
E11 MAKE ENTRIES ON SIMULATOR MAINTENANCE FORMS SUCH AS AFTO FORMS 349, 350, 359, 781 781A	73
F58 VISUALLY INSPECT VOLTAGE LEVELS, FREQUENCY VARIATIONS, OR CURRENT	73
F50 VISUALLY INSPECT ELECTRICAL SYSTEMS	73
O104 REMOVE OR INSTALL SOLDERED COMPONENTS SUCH AS TRANSISTORS, RESISTORS, OR CAPACITORS	71
O56 REMOVE OR INSTALL INDICATORS	71
F60 VISUALLY INSPECT WIRE HARNESES, CABLES, OR CONNECTOR PLUGS	69
F20 CONDUCT PERIODIC MAINTENANCE INSPECTIONS	68
O44 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	68
T11 PERFORM PREFLIGHT OPERATIONAL CHECKS	67
F54 VISUALLY INSPECT POWER SUPPLY SYSTEMS	67



TABLE 10

TASKS PERFORMED BY 70 PERCENT OR MORE OF DAFSC 3415X PERSONNEL  
(N=1,036)

TASKS	PERCENT MEMBERS PERFORMING
F19 CLEAN UP SHOPS	88
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	85
F45 STRIP ELECTRICAL WIRES	83
F50 VISUALLY INSPECT ELECTRICAL SYSTEMS	82
F37 PHYSICALLY CHECK FOR LOOSE MOUNTINGS OR CONNECTIONS	81
E11 MAKE ENTRIES ON OR ATTACH EQUIPMENT STATUS TAGS OR LABELS SUCH AS DD FORMS 1574 1575, 1577 or 1577-2	80
F60 VISUALLY INSPECT WIRE HARNESES, CABLES, OR CONNECTOR PLUGS	80
O56 REMOVE OR INSTALL INDICATORS	79
F54 VISUALLY INSPECT POWER SUPPLY SYSTEMS	79
F17 CLEAN SOLDERING IRONS	79
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	78
F58 VISUALLY INSPECT VOLTAGE LEVELS, FREQUENCY VARIATIONS, OR CURRENT	78
F47 TEST ELECTRO-MECHANICAL COMPONENTS SUCH AS SYNCHROS, RESOLVERS, POTENTIOMETERS, OR TRANSFORMERS	75
F20 CONDUCT PERIODIC MAINTENANCE INSPECTIONS	74
P2 ADJUST AC OR DC SUPPLIES	74
O1 DISASSEMBLE SUBASSEMBLIES FOR REMOVAL OR REPLACEMENT OF COMPONENTS	73
F9 CLEAN HAND TOOLS OR SHOP EQUIPMENT	73
O57 REMOVE OR INSTALL INSTRUMENT KNOBS	73
G6 DOCUMENT DISCREPANCIES OF SIMULATOR PERFORMANCES	72
O104 REMOVE OR INSTALL SOLDERED COMPONENTS SUCH AS TRANSISTORS, RESISTORS OR CAPACITORS	72
O44 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	72
F51 VISUALLY INSPECT ELECTRO-MECHANICAL DEVICES	71
F57 VISUALLY INSPECT TEST EQUIPMENT FOR SERVICEABILITY	71
F27 LACE WIRING ASSEMBLIES	70

TABLE 11

TASKS PERFORMED BY 65 PERCENT OR MORE OF DAFSC 3417X PERSONNEL  
(N=593)

TASKS	PERCENT MEMBERS PERFORMING
E11 MAKE ENTRIES ON SIMULATOR MAINTENANCE FORMS SUCH AS AFTO FORMS 349, 350, 359, 781 OR 781A	77
C37 PREPARE APRS	73
B8 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEM	70
E18 RESEARCH OR REQUISITION SUPPLY STOCK NUMBERS OR PARTS	70
D10 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	70
A3 ASSIGN WORK PRIORITIES	69
D11 DEMONSTRATE OPERATION OF EQUIPMENT	69
B16 DIRECT SHOP HOUSEKEEPING	68
D17 MAINTAIN OJT RECORDS	68
A15 MONITOR OR CERTIFY PREPARATION OF RECORDS OR REPORTS	65
D15 EVALUATE PROGRESS OF TRAINEES	65
E3 IDENTIFY SIMULATOR PARTS	65
D9 COUNSEL TRAINEES ON TRAINING PROGRESS	65

TABLE 12  
TASKS PERFORMED BY 80 PERCENT OR MORE OF DAFSC 34197 PERSONNEL  
(N=102)

TASKS	PERCENT MEMBERS PERFORMING
B22 DRAFT CORRESPONDENCE	98
A4 ATTEND STAFF, COUNCIL, BOARD, OR PLANNING MEETINGS	98
B30 INITIATE RECOGNITION FOR COMMENDABLE PERFORMANCE	93
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	92
B8 COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS	91
A15 MONITOR OR CERTIFY PREPARATION OF RECORDS OR REPORTS	90
C37 PREPARE APRS	90
A27 SCHEDULE LEAVES OR PASSES	89
B2 CLARIFY POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	88
C3 ENDORSE AIRMAN PERFORMANCE REPORTS (APRS)	86
A2 ASSIGN SPONSORS TO NEWLY ASSIGNED PERSONNEL	86
B28 INDOCTRINATE NEWLY ASSIGNED PERSONNEL	84
B21 DISTRIBUTE CORRESPONDENCE, TECHNICAL INFORMATION, OR DIRECTIVES	83
A13 ESTABLISH PROCEDURAL GUIDELINES SUCH AS OPERATING INSTRUCTIONS (OIs) OR SPECIAL OPERATING INSTRUCTIONS (SOIS)	82
C9 EVALUATE EQUIPMENT PERFORMANCE	82
A7 COORDINATE WITH SUPPLY ACTIVITIES	81
A6 COORDINATE SIMULATOR SCHEDULES WITH TRAINING SQUADRONS, MAINTENANCE, OR OPERATIONS	80
A3 ASSIGN WORK PRIORITIES	80
C25 EVALUATE REPORTS	80
C40 REVIEW MANNING DOCUMENTS	80



TABLE 13

PERCENT OF DAFSC 34197 PERSONNEL SUPERVISING VARIOUS DAFSC PERSONNEL WITHIN THE  
TRAINING DEVICES CAREER FIELD

TASK	PERCENT PERFORMING
B45 SUPERVISE CIVILIAN PERSONNEL	44
B46 SUPERVISE MILITARY PERSONNEL IN AFSCs OTHER THAN 341XX	30
B47 SUPERVISE ANALOG FLIGHT SIMULATOR SPECIALISTS (AFSC 34153)	21
B48 SUPERVISE ANALOG NAVIGATION/TACTICS SIMULATOR SPECIALISTS (AFSC 34155)	17
B49 SUPERVISE APPRENTICE ANALOG FLIGHT SIMULATOR SPECIALISTS (AFSC 34133)	10
B50 SUPERVISE APPRENTICE ANALOG NAVIGATION/TACTICS SIMULATOR SPECIALISTS (AFSC 34135)	11
B51 SUPERVISE APPRENTICE DEFENSIVE SYSTEMS TRAINER SPECIALISTS (AFSC 34132)	4
B52 SUPERVISE APPRENTICE DIGITAL FLIGHT SIMULATOR SPECIALISTS (AFSC 34134)	12
B53 SUPERVISE APPRENTICE DIGITAL NAVIGATION/TACTICS SIMULATOR SPECIALISTS (AFSC 34136)	12
B54 SUPERVISE APPRENTICE INSTRUMENT TRAINER SPECIALISTS (AFSC 34131)	8
B55 SUPERVISE APPRENTICE MISSILE PROCEDURES TRAINER SPECIALISTS (AFSC 34137)	2
B56 SUPERVISE INSTRUMENT TRAINER SPECIALISTS (AFSC 34151)	15
B57 SUPERVISE DEFENSIVE SYSTEMS TRAINER SPECIALISTS (AFSC 34152)	9
B58 SUPERVISE ANALOG FLIGHT SIMULATOR SPECIALISTS (AFSC 34153)	17
B59 SUPERVISE DIGITAL FLIGHT SIMULATOR SPECIALISTS (AFSC 34154)	22
B60 SUPERVISE ANALOG NAVIGATION/TACTICS SIMULATOR SPECIALISTS (AFSC 34155)	15
B61 SUPERVISE DIGITAL NAVIGATION/TACTICS SIMULATOR SPECIALISTS (AFSC 34156)	15
B62 SUPERVISE MISSILE PROCEDURES TRAINER SPECIALISTS (AFSC 34157)	3
B63 SUPERVISE INSTRUMENT TRAINER TECHNICIANS (AFSC 34171)	17
B64 SUPERVISE DEFENSIVE SYSTEMS TRAINER TECHNICIANS (AFSC 34172)	19
B65 SUPERVISE ANALOG FLIGHT SIMULATOR TECHNICIANS (AFSC 34173)	35
B66 SUPERVISE DIGITAL FLIGHT SIMULATOR TECHNICIANS (AFSC 34174)	43
B67 SUPERVISE ANALOG NAVIGATION/TACTICS SIMULATOR TECHNICIANS (AFSC 34175)	29
B68 SUPERVISE DIGITAL NAVIGATION/TACTICS SIMULATOR TECHNICIANS (AFSC 34176)	35
B69 SUPERVISE MISSILE PROCEDURES TRAINER TECHNICIANS (AFSC 34177)	5
B70 SUPERVISE TRAINING DEVICES SUPERINTENDENTS (AFSC 34197)	18

## ANALYSIS OF AFMS GROUPS

An analysis was also conducted comparing job differences among individuals grouped by time in service. Very similar conclusions to those for DAFSC groups were noted.

Table 14 displays the relative percent of time spent on duties by AFS 341XX personnel grouped by enlistment period. The same trend is exhibited here as was found in the separate analyses of the career ladders. Throughout all enlistment periods, airmen tend to move into positions of greater supervisory and management responsibility as they gain time in service. The longer individuals have in service, the less time they spend performing technical tasks and duties. However, it is not until the 20 year service point before personnel spend more time in supervisory and management functions than they do performing technical functions. Even at this point though, the rise in the time spent performing supervisory and management functions can be attributed to the inclusion in this table of DAFSC 34197 personnel. Fifty-one percent of the personnel in the 241 + months TAFMS group are Training Devices Superintendents. So for the most part, regardless of experience level, most AFS 341XX airmen will function as "hands-on" equipment technicians throughout their Air Force career.

A look at tasks performed by first enlistment airmen (148 months TAFMS) continues to show a high degree of homogeneity of the first job across the Training Devices career field. Of the 1144 inventory tasks, 85 are performed by 50 percent or more of this group. The average number of tasks for this group is 187. First enlistment airmen show a particularly high degree of task commonality in the duties of performing preventive maintenance, and removing or replacing components or system units as shown in Table 15.

TABLE 14

PERCENT TIME SPENT ON DUTIES BY 341XX AFMS GROUPS

DUTY	MONTHS TOTAL ACTIVE FEDERAL MILITARY SERVICE					
	1-48 (N=686)	49-96 (N=381)	97-144 (N=276)	145-192 (N=209)	193-240 (N=187)	241+ (N=144)
<u>SUPERVISORY AND MANAGEMENT FUNCTIONS</u>						
A ORGANIZING AND PLANNING	*	1	4	8	10	17
B DIRECTING AND IMPLEMENTING	1	4	8	13	17	27
C INSPECTING AND EVALUATING	1	4	6	12	14	21
D TRAINING	1	3	5	7	7	9
<u>ADMINISTRATIVE FUNCTIONS</u>						
E WORKING WITH FORMS, RECORDS, REPORTS, DIRECTIVES, OR TECHNICAL DATA	3	4	5	6	7	6
<u>TECHNICAL FUNCTIONS</u>						
F PERFORMING PREVENTIVE MAINTENANCE	16	13	11	8	7	3
G OPERATING TRAINING DEVICES	15	13	12	8	6	3
H OPERATING MISSILE PROCEDURES TRAINERS	1	*	*	*	*	*
I ISOLATE MALFUNCTIONS ON COMPUTERS AND PERIPHERAL EQUIPMENT	3	3	3	2	2	1
J ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS AND PERIPHERAL EQUIPMENT	4	4	3	2	2	1
K ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH ANALOG COMPUTERS	2	2	2	2	1	1
L ISOLATE MALFUNCTIONS ON SIMULATOR SYSTEMS WITH DIGITAL COMPUTERS	2	2	2	2	2	1
M ISOLATE MALFUNCTIONS ON SIMULATOR AND COMPUTER COMPONENTS	6	6	6	4	4	2
N ISOLATE MALFUNCTIONS ON MISSILE PROCEDURE	*	*	*	*	*	*
O REMOVING OR REPLACING COMPONENTS OR SYSTEM UNITS	17	16	12	9	7	3
P ALIGNING AND ADJUSTING SIMULATOR SYSTEMS OR COMPONENTS	9	8	7	6	5	2
Q PERFORMING IN-SHOP MAINTENANCE	6	6	5	4	3	1
R PERFORMING INSTRUMENT TRAINER INSTRUCTION FUNCTIONS	5	5	3	3	1	1
S MAINTAINING MOBILE AIRCREW TRAINING DEVICES	1	1	*	*	1	*
T PERFORMING OPERATIONAL CHECKS	5	5	4	3	3	1
U MAINTAINING MISCELLANEOUS EQUIPMENT	2	2	2	1	1	*

\* INDICATES LESS THAN ONE PERCENT



TABLE 15

REPRESENTATIVE TASKS PERFORMED BY 341XX PERSONNEL WITH 1-48 MONTHS TAFMS  
(N=686)

TASKS	PERCENT MEMBERS PERFORMING
F19 CLEAN UP SHOPS	91
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	88
F45 STRIP ELECTRICAL WIRES	85
F17 CLEAN SOLDERING IRONS	82
F50 VISUALLY INSPECT ELECTRICAL SYSTEMS	82
F37 PHYSICALLY CHECK FOR LOOSE MOUNTINGS OR CONNECTIONS	81
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	81
O56 REMOVE OR INSTALL INDICATORS	79
F60 VISUALLY INSPECT WIRE HARNESES, CABLES, OR CONNECTOR PLUGS	79
F58 VISUALLY INSPECT VOLTAGE LEVELS, FREQUENCY VARIATIONS, OR CURRENT	78
E11 MAKE ENTRIES ON SIMULATOR MAINTENANCE FORMS SUCH AS AFTO FORMS 349, 350, 359, 781 OR 781A	77
F54 VISUALLY INSPECT POWER SUPPLY SYSTEMS	77
F20 CONDUCT PERIODIC MAINTENANCE INSPECTIONS	76
F9 CLEAN HAND TOOLS OR SHOP EQUIPMENT	76
F47 TEST ELECTRO-MECHANICAL COMPONENTS SUCH AS SYNCHROS, RESOLVERS, POTENTIOMETERS, OR TRANSFORMERS	74
O44 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	73
O57 REMOVE OR INSTALL INSTRUMENT KNOBS	72
O104 REMOVE OR INSTALL SOLDERED COMPONENTS SUCH AS TRANSISTORS, RESISTORS OR CAPACITORS	72
G6 DOCUMENT DISCREPANCIES OF SIMULATOR PERFORMANCES	71
O1 DISASSEMBLE SUBASSEMBLIES FOR REMOVAL OR REPLACEMENT OF COMPONENTS	71
F51 VISUALLY INSPECT ELECTRO-MECHANICAL DEVICES	70
P2 ADJUST AC OR DC SUPPLIES	70
F6 CLEAN AIR FILTERS	70

## SIMILARITIES AND DIFFERENCES IN TASKS PERFORMED AMONG CAREER LADDERS IN THE TRAINING DEVICES CAREER FIELD

Since all the career ladders surveyed perform jobs related to the maintenance of training devices, it can be assumed that there are certain tasks that would be common for all these specialties. At the same time, it can be assumed that since each career ladder maintains different types of training devices, the tasks performed by each specialty would be different. This section will show the similarities and differences in task performance among the various Training Devices career ladders. As the data presented will illustrate, both assumptions mentioned above are correct. Career ladders are very similar in the areas of performing preventive maintenance and removing or replacing system components, but are very different in the maintenance of specific equipment.

This section will examine the similarities and differences in task performance by first grouping the Flight Simulator and Navigation/Tactics Training Devices career ladders (AFSCs 341X3, 341X4, 341X5, and 341X6), comparing and contrasting them, and then comparing and contrasting the task performance of each of the other Training Devices career ladders to the data of that combined group. The 1-48 month TAFMS groups in each career ladder were chosen for the comparison because they represent the largest groups of individuals in each of the specialties.

### Flight Simulator and Navigation/Tactics Training Devices Career Ladders

The Analog and Digital Flight Simulator career ladders (AFSCs 341X3 and 341X4), and the Analog and Digital Navigation/Tactics Training Devices career ladders (AFSCs 341X5 and 341X6), when combined form a very homogeneous group. As shown in Table 16, there are 59 tasks performed by 50 percent or more of the airmen in the 1-48 month TAFMS groups of each of these career ladders. When looking at a figure of 30 percent or more of each group performing, the number of common tasks rises to 142. In order to better demonstrate this commonality in tasks performed Table 17 lists the average number of tasks performed by first enlistment personnel in each career ladder. Clearly, the majority of tasks usually performed by the members of these groups are common across the four career ladders.

When comparing the similarities between the two AFSCs associated with analog training devices (AFSCs 341X3, 341X5) or those associated with digital training devices (AFSCs 341X4, 341X6), the results are even more dramatic. There are 177 tasks performed by 30 percent or more of first enlistment personnel in both AFSCs 341X3 and 341X5, and 254 tasks performed by 30 percent or more of both AFS 341X4 and 341X6 first enlistment groups.

There are however, tasks unique to each of these career ladders. There are 20 tasks of which only 30 percent or more of AFS 341X3 first enlistment personnel were found to be performing. These tasks listed in Table 18 are primarily related to the isolation of malfunctions on simulator systems with analog computers, and alignment and adjustment procedures. The 22 tasks shown in Table 19 exclusive to AFS 341X5 first enlistment airmen also fall in the same areas. There are only five tasks exclusive to the AFS 341X4 first enlistment group (See Table 20), but there are 31 tasks listed in Table 21 unique to the AFS 341X6 first enlistment personnel. The tasks of sole responsibility for this group lie primarily in the areas of operating training devices and malfunction isolation on simulator systems with digital computers.

#### Defensive System Career Ladder

The AFS 341X2, Defensive System, first enlistment group was found to possess a high degree of task commonality with the other groups maintaining flight related training devices. Of the 59 tasks listed in Table 16, 55 were also performed by 50 percent or more of this group. In addition, there were 122 tasks performed by 30 percent or more of first enlistment personnel in each of these five AFSCs. Although 122 common tasks are fewer for AFS 341X2 personnel than the other career ladders discussed, this group averages fewer tasks performed (167).

Defensive system personnel perform far more tasks in common with digital trainer maintenance personnel than with analog trainer maintenance personnel. AFS 341X2 first enlistment airmen perform 154 tasks common to 30 percent or more of each AFS 341X4 and 341X6 first enlistment groups but only 132 tasks common to 30 percent or more of each AFS 341X3 and 341X5 first enlistment groups.

This career ladder has more in common with the navigation/tactics training devices career ladders than with the flight simulator career ladders. There were 153 tasks performed by 30 percent or more of this career ladder and both AFSCs 341X5 and 341X6. There were 181 tasks performed by 30 percent or more of both AFSCs 341X3 and 341X6. Logically then, greater commonality was found to be with the Digital Navigation/Tactics Training Devices career ladder. There were however, some differences in tasks performed. Seventeen tasks were identified as being performed exclusively by Defensive System personnel and are listed in Table 22. As expected, they pertain to the operation and maintenance of specific defensive system training devices.

#### Missile Trainer Career Ladder

Although AFS 341X7 Missile Trainer personnel do not maintain equipment that simulates flight crew functions they do possess a great deal of task commonality with the Training Devices career ladders previously discussed. Of the 59 tasks listed in Table 16, 54 were also



performed by 50 percent or more of this group. There were 112 tasks performed by 30 percent or more of both AFS 341X7 first enlistment personnel and the first enlistment personnel in AFSCs 341X3, 341X4, 341X5, and 341X6. However, Missile Trainer personnel were found to exhibit the most task commonality with other personnel maintaining training devices with digital computers. There were 151 tasks performed by 30 percent or more of first enlistment airmen in the AFSCs 341X7, 341X4, and 341X6, and 170 tasks performed by 30 percent or more of both AFSC 341X7 and 341X6 groups.

There were also many very distinct differences in the tasks performed by Missile Trainer personnel as illustrated in Table 23. Again, as would be expected, the 56 tasks listed pertain primarily to the operation and maintenance of specific and unique missile trainer systems.

#### Instrument Trainer Career Ladder

When compared as a total group, there is very little commonality between Instrument Trainer personnel and the other Training Devices career ladders. Of the 59 tasks listed in Table 16, only four are performed by 50 percent or more of first enlistment personnel in this specialty. The number of tasks performed by 30 percent or more of the personnel in AFSC 341X1 and each of the flight simulator and navigation/tactics training devices career ladders is only 41. Although, as reported in the Occupational Survey Report for this career ladder, some AFS 341X1 personnel were found to be performing in a trainer maintenance capacity similar to Analog Flight Simulator (AFS 341X3) personnel, the majority of AFS 341X1 airmen however, function as instructor operators and are not actively involved in the maintenance of simulator equipment. Therefore, the common maintenance tasks linking the other Training Devices career ladders are not performed by large numbers of personnel in this specialty.

Instrument Trainer personnel are unique however, in their performance of instructor duties as illustrated by Table 24. The 43 tasks listed all pertain to performing instrument trainer instructor functions.

#### Summary

There is a great deal of task commonality and similarity among career ladders in the Training Devices career field. There is task commonality among personnel maintaining aircrew training devices, among personnel maintaining flight simulators, among personnel maintaining analog training devices, and among personnel maintaining digital training devices regardless of their AFSC. There is much similarity among maintainers in all career ladders in the areas of operating training devices, performing preventive maintenance, and in general malfunction isolation procedures.

There are also differences among the career ladders. Instrument Trainer instructor operators are very different in task performance from training devices maintainers. In addition, each career ladder is different from the others in the career field in terms of operation and maintenance of career ladder unique equipment. However, except for the unique instructor tasks performed by AFS 341X1 personnel, the exclusive tasks performed within any of the other career ladders are only a small part of the total job of that specialty.

TABLE 16

REPRESENTATIVE TASKS PERFORMED BY AIRMEN IN THE 1-48 MONTH TAFMS GROUPS  
OF THE 341X3, 341X4, 341X5, AND 341X6 CAREER LADDER

TASKS	TASK DIFFICULTY
E3 IDENTIFY SIMULATOR PARTS	4.03
E11 MAKE ENTRIES ON SIMULATOR MAINTENANCE FORMS SUCH AS AFTO FORMS 349, 350, 359, 781 or 781A	4.26
E18 RESEARCH OR REQUISITION SUPPLY STOCK NUMBERS OR PARTS	4.94
F6 CLEAN AIR FILTERS	2.02
F8 CLEAN COOLING FANS	2.04
F9 CLEAN HAND TOOLS OR SHOP EQUIPMENT	2.04
F14 CLEAN PARTS OR COMPONENTS USING SOLVENTS	3.07
F17 CLEAN SOLDERING IRONS	2.21
F19 CLEAN UP SHOPS	1.95
F20 CONDUCT PERIODIC MAINTENANCE INSPECTIONS	4.64
F27 LACE WIRING ASSEMBLIES	3.33
F30 LUBRICATE MECHANICAL ASSEMBLIES	2.90
F37 PHYSICALLY CHECK FOR LOOSE MOUNTINGS OR CONNECTIONS	3.39
F45 STRIP ELECTRICAL WIRES	2.08
F46 TEST ELECTRONIC COMPONENTS SUCH AS DIODES, TRANSISTORS, CAPACITORS, OR RESISTORS	4.61
F47 TEST ELECTRO-MECHANICAL COMPONENTS SUCH AS SYNCHROS, RESOLVERS, POTENTIOMETERS, OR TRANSFORMERS	5.19
F48 VACUUM EQUIPMENT	2.07
F49 VISUALLY INSPECT AIR CONDITIONING SYSTEMS	2.92
F50 VISUALLY INSPECT ELECTRICAL SYSTEMS	3.40
F51 VISUALLY INSPECT ELECTRO-MECHANICAL DEVICES	3.68
F54 VISUALLY INSPECT POWER SUPPLY SYSTEMS	3.59
F56 VISUALLY INSPECT SERVO SYSTEMS	3.55
F57 VISUALLY INSPECT TEST EQUIPMENT FOR SERVICEABILITY	3.40
F58 VISUALLY INSPECT VOLTAGE LEVELS, FREQUENCY VARIATIONS, OR CURRENT	3.82
G60 VISUALLY INSPECT WIRE HARNESSSES, CABLES, OR CONNECTOR PLUGS	3.39
G6 DOCUMENT DISCREPANCIES OF SIMULATOR PERFORMANCES	3.81
G63 OPERATE INSTRUCTOR CONSOLES	5.21
G134 VISUALLY OBSERVE CONSOLE INDICATORS	3.92
I38 ISOLATE MALFUNCTIONS ON POWER SUPPLIES	5.67
J5 ISOLATE MALFUNCTIONS ON ELECTRICAL SYSTEMS	5.36
J16 ISOLATE MALFUNCTIONS ON HANDSETS, HEADSETS, OR MICROPHONES	4.00
J22 ISOLATE MALFUNCTIONS ON INDICATOR SYSTEMS	5.12
M47 ISOLATE MALFUNCTIONS USING SCHEMATICS OR WIRING DIAGRAMS	6.03
O1 DISASSEMBLE SUBASSEMBLIES FOR REMOVAL OR REPLACEMENT OF COMPONENTS	4.63
O8 REMOVE OR INSTALL AIR FILTERS	2.61
O13 REMOVE OR INSTALL CABLE ASSEMBLIES	3.94
O17 REMOVE OR INSTALL CIRCUIT WIRING	4.55
O23 REMOVE OR INSTALL CONNECTING PLUGS	4.01
O44 REMOVE OR INSTALL FUSES OR CIRCUIT BREAKERS	2.85
O55 REMOVE OR INSTALL INDICATOR LIGHTS OR PANEL LIGHTS	2.71
O56 REMOVE OR INSTALL INDICATORS	3.03
O57 REMOVE OR INSTALL INSTRUMENT KNOBS	2.10
O59 REMOVE OR INSTALL INSTRUMENTS SUCH AS CONSOLE, COCKPIT, OR STUDENT STATION	2.90
O60 REMOVE OR INSTALL LEADS OR CORDS	2.78
O85 REMOVE OR INSTALL POWER SUPPLIES	3.78
O94 REMOVE OR INSTALL RELAYS OR SOLENOIDS	3.94
O95 REMOVE OR INSTALL RESOLVERS, SYNCHROS OR POTENTIOMETERS	4.90
O104 REMOVE OR INSTALL SOLDERED COMPONENTS SUCH AS TRANSISTORS, RESISTORS, OR CAPACITORS	4.62
O105 REMOVE OR INSTALL SPEAKERS, MICROPHONES, HEADSETS OR HANDSETS	3.25
O111 REMOVE OR INSTALL TOGGLE SWITCHES	3.27
O122 REWIRE SYSTEMS USING SOLDERING EQUIPMENT	4.67
P2 ADJUST AC OR DC SUPPLIES	4.44
P75 ADJUST POWER SUPPLIES	4.69
T1 CHECK SWITCHES FOR POSITIVE ACTION	2.98
T11 PERFORM PREFLIGHT OPERATIONAL CHECKS	4.89
T18 TEST CONSOLE INSTRUMENTS	4.24
T21 TEST OPERATE SIMULATORS TO ISOLATE MALFUNCTIONS	5.70
U6 MAINTAIN AREA BEAUTIFICATION	2.19
U7 PACK OR UNPACK EQUIPMENT	2.60



TABLE 17

AVERAGE NUMBER OF TASKS PERFORMED BY 1-48 TAFMS PERSONNEL IN  
AFSCs 341X3, 341X4, 341X5, AND 341X6

	1-48 MONTHS TAFMS			
	<u>341X3</u>	<u>341X4</u>	<u>341X5</u>	<u>341X6</u>
AVERAGE NUMBER OF TASKS PERFORMED	178	205	213	235

TABLE 18

TASKS EXCLUSIVE TO THE 341X3 CAREER LADDER  
PERFORMED BY 30 PERCENT OR MORE OF FIRST ENLISTMENT PERSONNEL

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F59 VISUALLY INSPECT WATER SUPPLY SYSTEMS	34
G38 OPERATE DIAGNOSTIC TEST PROGRAMS ON SIMULATORS WHICH USE ANALOG COMPUTERS SUCH AS AUTOMATIC AMPLIFIER CHECKERS	38
K5 ISOLATE MALFUNCTIONS ON ANGLE OF ATTACK (AOA) SYSTEMS	60
K7 ISOLATE MALFUNCTIONS ON AUTOPILOT SYSTEMS	70
K16 ISOLATE MALFUNCTIONS ON FLIGHT DIRECTOR SYSTEMS	57
K17 ISOLATE MALFUNCTIONS ON FUEL SYSTEMS	80
K19 ISOLATE MALFUNCTIONS ON HYDRAULIC SYSTEMS	59
K24 ISOLATE MALFUNCTIONS ON JET ENGINE SYSTEMS	65
K25 ISOLATE MALFUNCTIONS ON LAND, AIR, OR FREEZE RESET SYSTEMS	65
K32 ISOLATE MALFUNCTIONS ON RADIO AIDS CONSOLES	71
K33 ISOLATE MALFUNCTIONS ON RADIO NAVIGATIONAL SYSTEMS	52
K38 ISOLATE MALFUNCTIONS ON SOUND SYSTEMS SUCH AS ENGINE SOUND, TIRE SCREECH, OR MISSILE LAUNCH	58
M5 ISOLATE DEFECTIVE DEMODULATORS	35
O39 REMOVE OR INSTALL FIXED-WING FLIGHT DIRECTOR CONTROL SUCH AS THROTTLES OR CONTROL STICKS	30
O61 REMOVE OR INSTALL MAGNETIC ACTUATORS OR CYLINDERS	33
P7 ADJUST APPROACH OR GLIDE SLOPE DEVIATION RECORDERS ON SIMULATORS	41
P27 ADJUST DEMODULATORS ON SIMULATORS	56
P34 ADJUST ELECTRO-MECHANICAL CONTROL LOADING SYSTEMS	31
P39 ADJUST FLIGHT PATH RECORDERS	33
Q16 BENCH CHECK DEMODULATORS	32

TABLE 19

TASKS EXCLUSIVE TO THE 341X5 CAREER LADDER  
PERFORMED BY 30 PERCENT OR MORE OF FIRST ENLISTMENT PERSONNEL

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
E9 MAINTAIN TO FILES, TO COMPLIANCE RECORDS OR DIRECTIVE FILES	45
F22 CONDUCT QUALITY CONTROL INSPECTIONS	33
G46 OPERATE DOPPLER RADAR SYSTEMS	42
I24 ISOLATE MALFUNCTIONS ON INTEGRATOR SERVO SYSTEMS	31
K12 ISOLATE MALFUNCTIONS ON DOPPLER SYSTEMS	62
K18 ISOLATE MALFUNCTIONS ON GROUND TRACKING RADAR SYSTEMS	35
K39 ISOLATE MALFUNCTIONS ON SRAM SYSTEMS	38
K40 ISOLATE MALFUNCTIONS ON TERRAIN AVOIDANCE SYSTEMS	38
K43 ISOLATE MALFUNCTIONS ON TIMING SYSTEMS	40
M42 ISOLATE MALFUNCTIONS ON SRAM ATTACHMENTS	35
M44 ISOLATE MALFUNCTIONS ON TOPOGRAPHICAL COMPARATORS	40
O46 REMOVE OR INSTALL GEAR BOXES OTHER THAN SERVOS	33
O79 REMOVE OR INSTALL PLOTTING BOARDS	35
P19 ADJUST COLLECTION ELECTRONICS SYSTEMS	35
P45 ADJUST GEAR TRAINS ON SIMULATORS	33
P61 ADJUST MASTER TIMING	31
P72 ADJUST PHASING	45
P76 ADJUST PROJECTION ELECTRONIC SYSTEMS	35
P77 ADJUST PROJECTION OPTICS	58
P95 ADJUST T-10 TERRAIN DATA SIGNAL GENERATORS	45
P138 ALIGN TRICOLOR COLLECTION OPTICS	55
Q20 BENCH CHECK GENERATORS	33

TABLE 20

TASKS EXCLUSIVE TO THE 341X4 CAREER LADDER  
PERFORMED BY 30 PERCENT OR MORE OF FIRST ENLISTMENT PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
G28 OPERATE CARD CHECKERS	31
G51 OPERATE FLIGHT DIRECTOR CONTROLS	30
J40 ISOLATE MALFUNCTIONS ON THREE-DEGREE MOTION SYSTEMS	33
M40 ISOLATE MALFUNCTIONS ON SLIDE PROJECTORS	35
O96 REMOVE OR INSTALL SEATS OTHER THAN EJECTION	31

TABLE 21

TASKS EXCLUSIVE TO THE 341X6 CAREER LADDER  
PERFORMED BY 30 PERCENT OR MORE OF FIRST ENLISTMENT PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
G19 OPERATE AIR DECOY MISSILE SYSTEMS SUCH AS DRONES	30
G21 OPERATE AIR-TO-GROUND RADAR BOMB RUNS	36
G23 OPERATE ARMAMENT SYSTEMS	39
G24 OPERATE ATTACK RADARS	40
G26 OPERATE AUTOMATIC TEST EQUIPMENT	33
G45 OPERATE DISCS	32
G48 OPERATE ENGINE CONTROL SYSTEMS	30
G64 OPERATE INTENSITY OF TARGET, WEATHER, OR GROUND ILLUMINATION CONTROLS	30
G70 OPERATE MAGNETIC DISC UNITS	30
G77 OPERATE PERIPHERAL EQUIPMENT FOR STUDENT SCORING OR EVALUATIONS SUCH AS BOMB RUNS, APPROACHES, OR INTERCEPTS	31
G104 OPERATE TERRAIN FOLLOWING RADAR	34
G125 SET UP GROUND TARGETS	47
I8 ISOLATE MALFUNCTIONS ON CARD READERS	31
I18 ISOLATE MALFUNCTIONS ON DIGITAL TIMING SYSTEMS	30
I30 ISOLATE MALFUNCTIONS ON MAGNETIC TAPE UNITS	33
J1 ISOLATE MALFUNCTIONS ON CANOPY ACTUATING MECHANISMS	49
J4 ISOLATE MALFUNCTIONS ON DIGITAL TARGET GENERATION SYSTEMS	40
L1 ISOLATE MALFUNCTIONS ON AIRBORNE TARGET GENERATION SYSTEMS	36
L5 ISOLATE MALFUNCTIONS ON AOA SYSTEMS	38
L6 ISOLATE MALFUNCTIONS ON ATTACK RADAR SYSTEMS	43
L30 ISOLATE MALFUNCTIONS ON OPTICAL SIGHT SYSTEMS	30
L36 ISOLATE MALFUNCTIONS ON RWR ECM SYSTEMS SUCH AS THAWS OR TEWS	43
L42 ISOLATE MALFUNCTIONS ON TERRAIN AVOIDANCE SYSTEMS	30
L43 ISOLATE MALFUNCTIONS ON TERRAIN FOLLOWING SYSTEMS	31
L45 ISOLATE MALFUNCTIONS ON TIMING SYSTEMS	31
M20 ISOLATE MALFUNCTIONS ON DIGITAL LINKAGE CONTROL PANELS	38
M50 TRANSLATE COMPUTER LANGUAGE PROGRAMS	31
P15 ADJUST CARD READERS	31
P51 ADJUST INERTIAL NAVIGATION SYSTEMS	41
P55 ADJUST LANDMASS GANTRY DRIVE SYSTEMS	48
Q6 BENCH CHECK ANALOG-TO-DIGITAL CONVERTER SYSTEMS	31



TABLE 22

TASKS EXCLUSIVE TO THE 341X2 CAREER LADDER  
PERFORMED BY 30 PERCENT OR MORE OF FIRST ENLISTMENT PERSONNEL

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
G31 OPERATE CASSETTE TAPE UNITS	43
G52 OPERATE FIRE CONTROL ECM SYSTEMS	39
G53 OPERATE FIRE CONTROL HAND CONTROLS	54
G54 OPERATE FIRE CONTROL RADARS	42
G74 OPERATE MULTI-CHANNEL RECORDERS	39
G75 OPERATE PAPER TAPE PREPARATION UNITS	39
I32 ISOLATE MALFUNCTIONS ON MULTI-CHANNEL RECORDERS	31
K37 ISOLATE MALFUNCTIONS ON SIMULATED MANUAL JAMMING SYSTEMS	34
L10 ISOLATE MALFUNCTIONS ON CHAFF DISPENSER ECM SYSTEMS	38
L15 ISOLATE MALFUNCTIONS ON FLARE ECM SYSTEMS	44
L38 ISOLATE MALFUNCTIONS ON SIMULATED AUTOMATIC JAMMING SYSTEMS	40
L39 ISOLATE MALFUNCTIONS ON SIMULATED MANUAL JAMMING SYSTEMS	39
L44 ISOLATE MALFUNCTIONS ON THREAT DISPLAY ECM SYSTEMS	37
P36 ADJUST FIRE CONTROL SYSTEMS	45
P65 ADJUST MULTI-CHANNEL TAPE RECORDERS	50
P140 ALIGN VIDEO TARGET GENERATION SYSTEMS	42
Q12 BENCH CHECK COMPARATORS OR DISCRIMINATORS	47

TABLE 23

TASKS EXCLUSIVE TO THE 341X7 CAREER LADDER  
PERFORMED BY 30 PERCENT OR MORE OF FIRST ENLISTMENT PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
E16 PREPARE TECHNICAL ORDER SYSTEM PUBLICATION IMPROVEMENT REPORT AND REPLY FORMS (AFTO FORM 22)	31
F31 NORMALIZE COMMUNICATION SYSTEMS	83
F32 NORMALIZE STATUS AND COMMAND SYSTEMS	63
G16 MANUALLY PUNCH PAPER TAPES	48
H1 OPERATE AIR COMPRESSOR SYSTEMS	48
H2 OPERATE AUDIO CLOCKS	37
H6 OPERATE BUFFERS	52
H9 OPERATE EMERGENCY AIR CONDITIONING SYSTEMS	31
H10 OPERATE LAUNCH CONTROL SYSTEMS	65
H11 OPERATE LAUNCH ENABLE SYSTEMS	62
H12 OPERATE MAINTENANCE STATUS REPORTING SYSTEMS	33
H14 OPERATE MISSILE FAULT LOCATOR SYSTEMS	42
H16 OPERATE OR PERFORM EQUIPMENT EMERGENCY SHUTDOWN PROCEDURES	83
H17 OPERATE OR PERFORM EQUIPMENT SHUTDOWN PROCEDURES	94
H18 OPERATE OR PERFORM EQUIPMENT STARTUP PROCEDURES	92
H19 OPERATE PUBLIC ADDRESS (PA) SYSTEMS	44
H21 OPERATE SIGNAL DATA RECORDERS	69
H26 OPERATE VOICE REPORTING ASSEMBLY SYSTEMS	35
H27 OPERATE 465L SYSTEMS	79
H28 OPERATE 487L SYSTEMS	60
I33 ISOLATE MALFUNCTIONS ON PAPER TAPE PREPARATION UNITS	56
I34 ISOLATE MALFUNCTIONS ON PAPER TAPE UNITS	60
M51 WRITE FLOW CHARTS	31
N1 ISOLATE MALFUNCTIONS ON AIR COMPRESSOR SYSTEMS	35
N2 ISOLATE MALFUNCTIONS ON AUDIO CLOCKS	44
N3 ISOLATE MALFUNCTIONS ON AUDIO HAZARD ALARM SYSTEMS	50
N4 ISOLATE MALFUNCTIONS ON BATTERY POWER SUPPLIES	35
N5 ISOLATE MALFUNCTIONS ON BUFFERS	58
N6 ISOLATE MALFUNCTIONS ON CABLE PRESSURE ALARM SYSTEMS	31
N8 ISOLATE MALFUNCTIONS ON EMERGENCY AIR CONDITIONING SYSTEMS	38
N9 ISOLATE MALFUNCTIONS ON LAUNCH CONTROL SYSTEMS	77
N10 ISOLATE MALFUNCTIONS ON LAUNCH ENABLE SYSTEMS	73
N11 ISOLATE MALFUNCTIONS ON MISSILE FAULT LOCATOR SYSTEMS	44
N14 ISOLATE MALFUNCTIONS ON PA SYSTEMS	60
N15 ISOLATE MALFUNCTIONS ON SHOCK ISOLATOR SYSTEMS	52
N16 ISOLATE MALFUNCTIONS ON SIGNAL DATA RECORDERS	79
N17 ISOLATE MALFUNCTIONS ON SIMULATED FACILITY SYSTEMS	35
N18 ISOLATE MALFUNCTIONS ON UNIVAC 1532 INPUT OR OUTPUT CONSOLES	35
N21 ISOLATE MALFUNCTIONS ON VOICE MESSAGE SYNTHESIZERS	63
N22 ISOLATE MALFUNCTIONS ON VOICE REPORTING ASSEMBLY SYSTEMS	33
N23 ISOLATE MALFUNCTIONS ON 465L SYSTEMS	85
N24 ISOLATE MALFUNCTIONS ON 487L SYSTEMS	62
O6 RECONFIGURE MISSILE PROCEDURES TRAINERS	48
P9 ADJUST AUDIO CLOCKS	35
P21 ADJUST COMPUTER MEMORY BIT REGISTERS	38
P33 ADJUST DRIVE CURRENTS	46
P70 ADJUST PA SYSTEMS	52
P71 ADJUST PAPER TAPE PREPARATION UNITS	48
P97 ADJUST TAPE PUNCH UNITS	77
P98 ADJUST TAPE READERS	94
P99 ADJUST TAPE RECORDERS	37
P100 ADJUST TAPE TRANSPORTS OR HANDLERS	42
P102 ADJUST TELEPRINTERS	33
P109 ADJUST VOICE MESSAGE SYNTHESIZERS	54
P114 ADJUST 465L SYSTEMS	56
Q46 BENCH CHECK 465L SYSTEMS	37

TABLE 24

TASKS EXCLUSIVE TO THE 341X1 CAREER LADDER  
PERFORMED BY 30 PERCENT OR MORE OF FIRST ENLISTMENT PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING
G120 SERVE AS INSTRUCTOR PILOT DURING SIMULATOR MISSIONS	41
R1 BRIEF STUDENTS OR PILOTS ON SIMULATED TRAINING MISSIONS	62
R2 BRIEF STUDENTS OR PILOTS ON STUDY REQUIREMENTS FOR NEXT SCHEDULED TRAINER FLIGHT	43
R6 CRITIQUE STUDENTS OR PILOTS ON TRAINING MISSIONS	59
R7 DEMONSTRATE INSTRUMENT TRAINER FLIGHT OPERATIONS OR MANEUVERS	58
R8 EVALUATE STUDENT OR PILOT PERFORMANCE	57
R9 FLY PROFICIENCY TRAINING MISSIONS ON INSTRUMENT TRAINERS	42
R10 INSTRUCT OR DEMONSTRATE AIR ROUTE TRAFFIC CONTROL (ARTC) PROCEDURES	46
R11 INSTRUCT OR DEMONSTRATE ALTITUDE CONTROL PROCEDURES	51
R12 INSTRUCT OR DEMONSTRATE APPLICATION OF FLIGHT MANUALS OR REGULATIONS TO INSTRUMENT OPERATIONS	45
R13 INSTRUCT OR DEMONSTRATE BASIC FLIGHT MANEUVERS	52
R14 INSTRUCT OR DEMONSTRATE BASIC INFORMATION ON NAVIGATIONAL AIDS SUCH AS LOCATION, RANGES OR IDENTIFIERS	58
R15 INSTRUCT OR DEMONSTRATE COCKPIT CHECK PROCEDURES	55
R16 INSTRUCT OR DEMONSTRATE CONFIDENCE MANEUVERS	49
R17 INSTRUCT OR DEMONSTRATE CONSOLE PANEL OPERATION TECHNIQUES OR PROCEDURES	51
R18 INSTRUCT OR DEMONSTRATE DEPARTURE PROCEDURES	59
R19 INSTRUCT OR DEMONSTRATE DME PROCEDURES	46
R20 INSTRUCT OR DEMONSTRATE ENROUTE DESCENT PROCEDURES	46
R21 INSTRUCT OR DEMONSTRATE FIX-TO-FIX NAVIGATION PROCEDURES	59
R22 INSTRUCT OR DEMONSTRATE FLIGHT DIRECTOR OPERATIONS	32
R24 INSTRUCT OR DEMONSTRATE GROUND CONTROLLED APPROACH (GCA) PROCEDURES	54
R26 INSTRUCT OR DEMONSTRATE GROUND OR AIRBORNE EQUIPMENT CHECKPOINT PROCEDURES	30
R27 INSTRUCT OR DEMONSTRATE HOLDING OR STACKING PROCEDURES	54
R28 INSTRUCT OR DEMONSTRATE ILS PROCEDURES	39
R29 INSTRUCT OR DEMONSTRATE INFLIGHT CHECK PROCEDURES	48
R30 INSTRUCT OR DEMONSTRATE INSTRUMENT CHECK PROCEDURES	46
R32 INSTRUCT OR DEMONSTRATE INSTRUMENT PANEL CROSS CHECK TECHNIQUES OR PROCEDURES	52
R34 INSTRUCT OR DEMONSTRATE MISSED APPROACH PROCEDURES	58
R35 INSTRUCT OR DEMONSTRATE PENETRATION AND APPROACH PROCEDURES	61
R36 INSTRUCT OR DEMONSTRATE RADAR APPROACH CONTROL (RAPCON) PROCEDURES	41
R37 INSTRUCT OR DEMONSTRATE RADIO FAILURE PROCEDURES	33
R38 INSTRUCT OR DEMONSTRATE RATED AND TIMED TURNS OR TURNS USING MAGNETIC COMPASSES	41
R43 INSTRUCT OR DEMONSTRATE TAKE-OFF PROCEDURES	55
R44 INSTRUCT OR DEMONSTRATE TOWER OR GROUND PROCEDURES	55
R45 INSTRUCT OR DEMONSTRATE UNUSUAL ALTITUDE RECOVERIES	54
R47 INSTRUCT OR DEMONSTRATE VERY HIGH FREQUENCY OMNIRANGE (VOR) PROCEDURES	49
R50 INSTRUCT STUDENTS OR PILOTS ON SETTING UP OPERATION OR USE OF INSTRUMENT TRAINERS	48
R51 MAKE STUDY REFERENCE RECOMMENDATIONS FOR IMPROVING STUDENT OR PILOT PERFORMANCE	39
R53 PREPARE STUDENT GRADE REPORTS	42
R55 RESEARCH AIR FORCE REGULATIONS OR MANUALS	46
R56 RESEARCH COMMAND REGULATIONS OR MANUALS	39
R57 RESEARCH FEDERAL AVIATION AGENCY (FAA) REGULATIONS	45
R58 RESEARCH FLIPS	43



## COMPARISON OF AFR 39-1 SPECIALTY DESCRIPTIONS

In evaluating the AFR 391 specialty descriptions of each ladder in the Training Devices career field, it became apparent that similar wording was being used to describe the duties and responsibilities of each specialty. As illustrated in Table 25, each paragraph in the Duties and Responsibilities section of the 3-/5-skill level specialty descriptions for each career ladder begin with essentially the same key italicized wording. The Specialty Summary is also essentially the same for each of the 3-/5-skill level descriptions. Although the paragraphs are not as closely aligned in the 7-skill level specialty descriptions, Table 25 shows that they too, are very similar in wording. Only the type of equipment maintained or operated changes from one description to the next.

The fact that the AFR 39-1 specialty descriptions for the ladders in the Training Devices career field describe similar duties and responsibilities is not to imply that the jobs are essentially the same. Rather the question should be raised as to whether these jobs should be classified as seven distinct specialties, each requiring an AFSC, or whether there should be fewer specialties within the career field. As these descriptions are currently written, there does not appear to be sufficient differentiation in job functions between the specialties to justify separate AFSCs. If these career ladders are to remain separate, specialty descriptions need to be written that emphasize the distinct and unique duties and responsibilities of each career ladder that were pointed out in the Occupational Survey Report for each of these specialties.

This similarity in job function displayed in the AFR 39-1 specialty descriptions has already been illustrated in the career field structure and the analysis of task performance. It is also evident in the construction of Specialty Training Standards.

TABLE 25

KEY ITALICIZED WORDING FROM THE AFR 39-1 SPECIALTY DESCRIPTIONS FOR EACH CAREER LADDER  
IN THE AFS 341XX TRAINING DEVICES CAREER LADDER

3-/5-SKILL LEVEL DESCRIPTIONS	341X1	341X2	341X3	341X4	341X5	341X6	341X7
PARAGRAPH A	PERFORMS MAINTENANCE	PERFORMS PREVENTIVE MAINTENANCE	PERFORMS PREVENTIVE MAINTENANCE	PERFORMS PREVENTIVE MAINTENANCE	PERFORMS PREVENTIVE MAINTENANCE	PERFORMS PREVENTIVE MAINTENANCE	PERFORMS PREVENTIVE MAINTENANCE
PARAGRAPH B	INSTALLS AND REPAIRS	INSTALLS, ADJUSTS, AND MODIFIES	INSTALLS, ADJUSTS, AND MODIFIES	INSTALLS, ADJUSTS, AND MODIFIES	INSTALLS, MODIFIES, AND REPAIRS	INSTALLS, TROUBLESHOOTS, AND REPAIRS AND MODIFIES	REPAIRS, ADJUSTS, AND MODIFIES
PARAGRAPH C	OPERATES AND INSTRUCTS	OPERATES	OPERATES	OPERATES	OPERATES	OPERATES	OPERATES
PARAGRAPH D	SUPERVISES	SUPERVISES	SUPERVISES	SUPERVISES	SUPERVISES	SUPERVISES	SUPERVISES
7-SKILL LEVEL DESCRIPTIONS							
PARAGRAPH A	ADVISES ON TECHNICAL PROBLEMS OF INSTALLATION, OPERATION, AND REPAIR	INSPECTS AND MAINTAINS	INSPECTS AND MAINTAINS	INSPECT AND MAINTAINS	ADVISES ON TECHNICAL PROBLEMS OF INSTALLATION, OPERATION, AND REPAIR	ADVISES ON TECHNICAL PROBLEMS OF INSTALLATION, OPERATION, AND REPAIR	INSPECTS AND MAINTAINS
PARAGRAPH B	INSTALLS, REPAIRS, AND OVERHAULS, AND MODIFIES	INSTALLS, REPAIRS, TROUBLESHOOTS, AND OVERHAULS AND MODIFIES	TROUBLESHOOTS, AND REPAIRS	TROUBLESHOOTS, AND REPAIRS	INSTALLS, TROUBLESHOOTS, REPAIRS, AND MODIFIES	INSTALLS, TROUBLESHOOTS, REPAIRS, AND MODIFIES	INSTALLS, REPAIRS, TROUBLESHOOTS, OVERHAUL AND MODIFIES
PARAGRAPH C	INSPECTS	OPERATES	MODIFIES AND INSTALLS	INSTALLS, AND MODIFIES	INSPECTS	INSPECTS	OPERATES
PARAGRAPH D	OPERATES	SUPERVISES	SUPERVISES	OPERATES	OPERATES	OPERATES	SUPERVISES
PARAGRAPH E	SUPERVISES		SUPERVISES	SUPERVISES	SUPERVISES	SUPERVISES	

## COMPARISON OF THE TRAINING DEVICES SPECIALTY TRAINING STANDARDS (STS) FOR SIMILARITIES AND DIFFERENCES

A comparison of similarities and differences of STS tasks and knowledges across all ladders of the Training Devices career field was also accomplished. Since a comparison of each STS to the survey data was conducted and reported previously in the career ladder Occupational Survey Reports, this section will not readdress the findings.

Table 26 lists the similarities in the STS paragraphs for the various Training Devices career ladders. As is illustrated, the first 10 paragraphs are essentially the same for each specialty. Further similarities can also be noted, especially among the flight simulator and navigation/tactics career ladders. It appears that all the specialties possess certain common areas in which similar training is required, thus providing further evidence to substantiate the need for consolidation of some of the AFSCs in this career field.

Of course, each career ladder STS contains tasks and knowledges unique to that specialty. It is not within the scope of this report to determine whether these tasks and knowledges are appropriate for inclusion in the STS or whether they would be more appropriate in an AF Form 797, Job Proficiency Guide. That is a decision for training managers to make in cooperation with the major using agencies of Training Devices personnel. However, there is little question that like the AFR 39-1 specialty descriptions, the STS's within this career field possess a great deal of similarity in their training requirements.



TABLE 26

COMPARISON OF SPECIALTY TRAINING STANDARDS BY TASKS AND KNOWLEDGE PARAGRAPHS  
FOR CAREER LADDERS IN THE AFS 341XX TRAINING DEVICES CAREER FIELD

TASK AND KNOWLEDGE PARAGRAPHS	STS PARAGRAPH NUMBER						
	341X1	341X2	341X3	341X4	341X5	341X6	341X7
CAREER LADDER PROGRESSION							
SECURITY	1	1	1	1	1	1	1
TRAINING DEVICES SAFETY	2	2	2	2	2	2	2
TECHNICAL ORDERS	3	3	3	3	3	3	3
SUPPLY RESPONSIBILITIES	4	4	4	4	4	4	4
SUPERVISION AND TRAINING	5	7	5	5	5	5	5
MAINTENANCE MANAGEMENT, INSPECTION SYSTEMS AND FORMS	6	5	6	6	6	6	6
CLASS I TRAINER EQUIPMENT INVENTORY, UTILIZATION, AND STATUS REPORTING	7	6	7	7	7	7	7
TOOLS AND TEST EQUIPMENT	8	8	8	8	8	8	8
ELECTRONIC PRINCIPLES	9	9	9	9	9	9	10
AERODYNAMICS OF FLIGHT	10	10	10	10	10	10	9
AIRCREW TRAINING DEVICES (ATD) CONFIGURATION	11	-	11	11	-	-	-
ATD CIRCUITS AND COMPONENTS	-	-	12	12	11	11	12*
MAINTENANCE OF ATDs	22/23	11	13	13	12	13	-
OPERATE ATD CONSOLES	26	18	-	19	15	16	-
	15	19	15	16	14	15	-

\* MISSILE PROCEDURES TRAINER CONFIGURATION

TOTAL NUMBER OF STS PARAGRAPHS PER LADDER						
341X1	341X2	341X3	341X4	341X5	341X6	341X7
26	19	17	19	15	16	72

## COMPARISON OF CURRENT SURVEYS TO THE PREVIOUS SURVEYS FOR AFSCs 341X3, 341X4, 341X5, and 341X6

In March 1974, an Occupational Survey Report was published covering the AFS 342X0 Flight Simulator, and AFS 343X0 Navigation/Bomb/Tactics Trainer career ladders. In April 1976, these two specialties were split to form the Analog and Digital Flight Simulator, and the Analog and Digital Navigation/Tactics Training Devices career ladders. Since this reorganization has made individual survey comparison very difficult, the four current surveys were compared as one to the previous survey and is included in this addendum.

Sample sizes for both surveys were representative. There were 1,166 respondents representing 67 percent of the career ladders' population in the previous survey. There were 1,334 respondents from the four AFSCs in the current survey, or 76 percent of the total assigned population.

Although there is little resemblance in career ladder structure between the two surveys, one factor has remained stable over time. In both studies, personnel tended to group by the type of equipment operated or maintained. In the first survey, it was by type of aircraft simulator. In the current survey, it was by computer type (analog or digital) of the simulator system. This tendency to group by computer type was also noted in the 1974 survey. It was realized then that as the fully integrated flight and navigation/tactics mission simulators entered the Air Force inventory the distinction between the separate jobs of the flight simulator personnel and the navigation/tactics trainer personnel would become blurred. This has indeed occurred as shown by survey results.

While the job structure appears to have changed through changes in equipment, the job satisfaction levels and reenlistment intentions of these airmen have remained relatively the same. Job satisfaction levels and reenlistment intentions were high in the first survey, and if anything, may be higher in the current survey.

Overall, the analysis of these career ladders over time seems to indicate that the job structure has changed and should continue to change as new and more sophisticated simulators become operational. At the same time, however, the jobs have remained and should continue to remain challenging and satisfying to the airmen that perform them.

## SUMMARY OF RELATIVE JOB SATISFACTION

Table 27 displays the various percentages by career ladder of the responses to questions regarding job interest and perceived utilization of talents and training. As in the Occupational Survey Reports for each specialty, the percentages of responses from individuals in mission equipment maintenance AFSCs surveyed in 1977, are included for purposes of comparison.

Only the AFS 341X1 career ladder displayed lower job interest or perceived utilization of talents and training than the responses in the comparative sample. It is interesting to note that this career ladder, while classified as a maintenance specialty, actually has the majority of its personnel performing non-maintenance type jobs. It is not uncommon to find personnel that have been identified and trained for one type of job but performing in another to be dissatisfied with their work.

On the other hand, AFSCs 341X4, 341X6, and 341X7 are considerably more satisfied with their jobs than their career field contemporaries or their counterparts surveyed in 1977. No explanation for this can be given although, they do maintain newer and more sophisticated electronic equipment and perform a higher number of more difficult tasks in doing so.

Table 28 presents the responses to job interest and perceived utilization of talents and training of the first enlistment group for each career ladder. Results are similar to those described for the career ladder comparisons.



TABLE 27

EXPRESSION OF JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS AND TRAINING  
BY 341XX CAREER LADDER GROUPS  
(PERCENT RESPONDING)

	341X1 (N=185)	341X2 (N=137)	341X3 (N=483)	341X4 (N=415)	341X5 (N=159)	341X6 (N=277)	341X7 (N=96)	COMPARAT. AFSCs**
<u>I FIND MY JOB</u>								
NO REPLY	1	*	*	*	0	*	0	0
EXTREMELY DULL TO FAIRLY DULL SO-SO	17	12	10	9	11	8	8	13
FAIRLY INTERESTING TO EXTREMELY INTERESTING	15	14	14	6	11	5	9	16
	67	74	76	85	78	87	83	71
<u>MY JOB UTILIZES MY TALENTS</u>								
NO REPLY	0	1	*	*	0	1	1	0
NOT AT ALL OR VERY LITTLE	29	21	19	17	18	18	12	24
FAIRLY WELL TO VERY WELL	60	70	69	69	71	68	74	66
EXCELLENTLY TO PERFECTLY	11	8	12	14	11	13	13	10
<u>MY JOB UTILIZES MY TRAINING</u>								
NO REPLY	*	*	*	*	0	0	0	0
NOT AT ALL OR VERY LITTLE	32	19	18	17	25	29	14	23
FAIRLY WELL TO VERY WELL	58	74	70	71	65	64	69	65
EXCELLENTLY TO PERFECTLY	10	7	12	12	10	7	17	12

\* INDICATES LESS THAN ONE PERCENT

\*\* BASED ON A SUMMARY OF OVER 21,800 RESPONSES FROM MISSION EQUIPMENT MAINTENANCE AFSCs SURVEYED IN 1977

TABLE 28

EXPRESSION OF JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS AND TRAINING  
BY FIRST ENLISTMENT GROUPS IN THE 341XX CAREER FIELD  
(PERCENT RESPONDING)

	1-48 MONTHS TOTAL ACTIVE MILITARY SERVICE							COMPARATIVE
I FIND MY JOB	341X1 (N=69)	341X2 (N=53)	341X3 (N=217)	341X4 (N=127)	341X5 (N=55)	341X6 (N=100)	341X7 (N=52)	AFSCs**
NO REPLY	1	2	*	0	0	0	0	0
EXTREMELY DULL TO FAIRLY DULL	19	17	10	6	13	9	11	17
SO-SO	16	11	15	4	13	3	12	21
FAIRLY INTERESTING TO EXTREMELY INTERESTING	64	70	75	90	74	88	77	62
MY JOB UTILIZES MY TALENTS								
NO REPLY	0	2	0	1	0	0	2	0
NOT AT ALL OR VERY LITTLE	35	26	22	19	18	19	19	32
FAIRLY WELL TO VERY WELL	59	65	67	72	71	70	68	64
EXCELLENTLY TO PERFECTLY	6	9	11	8	11	11	11	4
MY JOB UTILIZES MY TRAINING								
NO REPLY	1	0	0	0	0	0	0	0
NOT AT ALL OR VERY LITTLE	30	17	22	20	24	30	19	26
FAIRLY WELL TO VERY WELL	60	79	69	73	69	68	66	67
EXCELLENTLY TO PERFECTLY	9	4	9	7	7	2	15	7

\* INDICATES LESS THAN ONE PERCENT

\*\* BASED ON A SUMMARY OF OVER 9900 RESPONSES FROM FIRST ENLISTMENT PERSONNEL IN MISSION EQUIPMENT  
MAINTENANCE AFSCs SURVEYED IN 1977

## A CORRELATION OF CAREER FIELD TRENDS WITH OCCUPATIONAL SURVEY RESULTS

At this time, there are a number of independent factors bearing on this career field that have created a certain amount of turmoil and uncertainty among the personnel assigned to operate and maintain Air Force training devices. This section will review the principle highlights of the survey results for each career ladder and discuss them in relation to the current trends affecting the career field.

In the case of AFS 341X1 Instrument Trainer personnel, the majority were found to be performing primarily as instructor operators and not as equipment maintainers. Although they receive six weeks of resident electronic principles training, they show the least utilization of this training of any Training Devices career ladder as reported in the Occupational Survey Report, Summary for AFSCs Trained In Electronic Principles at Chanute AFB, published in February 1978. The inability of AFS 341X1 personnel to fully utilize their electronic principles training does not show proper utilization of training resources. In addition, the introduction of the Undergraduate Pilot Training - Instrument Flight Simulator has severely impacted on jobs performed by these airmen. Currently maintained by either contractor or AFS 341X4 personnel, and operated by either contractor or civilian federal employees, the instrument flight simulator does not require Instrument Trainer personnel. It has also severely reduced the use of the old instrument trainers which do require them. Discussions with personnel in the field indicate the instrument trainers will, in the near future, be either replaced by a new digital trainer maintained by AFS 341X4 personnel and operated by a rated pilot or just abandoned altogether. In any case, it appears there will be very little left on which to justify a separate career ladder for this specialty.

AFS 341X2 Defensive System Trainer personnel displayed a high degree of task commonality with other AFSCs operating and maintaining aircrew training devices, especially with AFS 341X6 Digital Navigation/Tactics Training Devices personnel. Although there is insufficient data for recommending combination of this specialty with another AFSC, consideration should be given to including this career ladder in any discussions involving reorganization of the aircrew training devices career ladders (AFSCs 341X3, 341X4, 341X5, and 341X6) since the defensive system trainers are also aircrew training devices.

As with AFS 341X1 personnel, airmen assigned as AFS 341X3 Analog Flight Simulator personnel face an uncertain future. As the analog flight simulators are replaced with the more sophisticated digital mission simulators, the requirement for these individuals will steadily decrease. This is currently reflected in the projected resident course load of only 20 students during FY 79 and none for FY 80. If the career ladder is programmed for elimination, it is best to consider now, where in the classification system these airmen should be placed and whether training prior to reclassification will be necessary. Conversations with personnel in the field incite an awareness of the situation.



A solution probably best for moral would be a classification change as soon as possible and a manning of 341X3 positions by special experience identifier (SEI) until the positions are deleted.

The situation looks much better for airmen in the AFS 341X4 Digital Flight Simulator career ladder. As the new digital mission simulators enter the Air Force inventory, the manning of this specialty will increase. Since this career ladder will soon be the largest specialty in the career field, it should serve as the basic ladder for any classification action that might result in specialty shredouts.

Like the analog flight simulators, analog navigation/tactics training devices are rapidly being replaced by newer digital systems. Consequently, the requirement for AFS 341X5 Navigation/Tactics Training Devices personnel will also decrease. Only 11 are projected for training during the FY 79-80 time frame. Any decisions made concerning the AFS 341X3 career ladder would also apply to this specialty.

The manning of the AFS 341X6 Digital Navigation/Tactics Training Devices career ladder should also increase as the new digital training devices replace the old analog systems. However, in April 1977, at the Career Field 341XX Review Conference held at Chanute AFB, Ill., representatives from TAC recommended that AFSCs 341X4 and 341X6 be combined because of the high similarity in the utilization of these personnel. Survey data supports this recommendation. The tasks performed and the percent of time spent on those tasks was so similar that the two AFSCs could not be distinguished separately in the career field job cluster analysis. Identification of job types within each AFSC required separate cluster diagrams. This concept is also supported by conversations with field supervisors who readily admit that they often use AFS 341X4 and 341X6 personnel interchangeably.

AFS 341X7 Missile Trainer personnel, while not performing maintenance on air crew training devices, still possess a great deal of task commonality with the other ladders in the career field, especially those maintaining digital computer systems. Although there is insufficient evidence to suggest this career ladder could be combined with another aircrew training devices career ladder, survey data does support this specialty as a shredout of a more broadly named digital training devices AFSC that would also include AFSCs 341X2, 341X4, and 341X6.

There is little question that with over 200 new simulators and training devices on order and scheduled to enter the inventory over the next four years that the Training Devices career field is in a rapid state of change. As electronic technology has advanced and new training devices replace the old, the differences in the jobs performed within the various career ladders have become less distinguishable. The time for a hard look at restructuring this career field has arrived. Career field managers should review the situation, apply the information available to them, and resolve the existing problems as soon as possible so the high moral, job satisfaction, and job performance of the airmen in the Training Devices career field will be maintained.

## IMPLICATIONS

In the analysis of the survey data, it was found that the Training Devices career field is composed, for the most part, of fairly homogeneous, reasonably satisfied individuals whose job is to operate and maintain aircrew and missile training devices. There is a high degree of commonality across all the career ladders in the areas of performing preventive maintenance, operating training devices, and general malfunction isolation procedures. There are also distinguishing differences among the career ladders, especially in the areas of performing instructor operator duties and in the operation and maintenance of equipment unique to each career ladder. The implications of such findings are many and varied.

Certainly, there is sufficient occupational survey data, coupled with agreement among major users, to recommend consolidation of the AFS 341X4 and AFS 341X6 career ladders. The future of the jobs in these specialties is assured, and as more and more training devices utilizing digital computers enter the Air Force inventory, the necessity of having knowledge in this newer technology in order to adequately function at the 9-skill level will surely be an advantage to the individuals now maintaining digital equipment. What then of the other airmen in the career field? As the analog training devices are replaced by digital systems, what will happen to these personnel? During this transition period, should the AFS 341X1, AFS 341X3, AFS 341X5 remain distinct specialties until the changeover is complete? Should all the aircrew training devices be combined now and instrument flight and analog simulator positions identified through either a specialty shredout or a special experience identifier (SEI)? Is the defensive system trainer an aircrew training device and is there enough similarity in the jobs performed by AFS 341X2 airmen to consider this AFSC in any plans concerning the ladders maintaining aircrew training devices? Is the Missile Trainer career ladder really so different and unique that it should remain a separate AFSC; or should it be a specialty shredout of a digital training devices career ladder; or could the job be performed by airmen from an aircrew training devices career ladder?

There is little doubt that much time and considerable effort on the part of everyone concerned with this career field will be needed to answer these questions. A comprehensive plan to provide stability and order to personnel management during this period of equipment transition must be formulated and implemented as soon as possible to minimize personnel turmoil, insure that the technical training center will provide the students with the quality training necessary to perform the job in the field, and to especially maintain the high degree of job satisfaction currently exhibited by the airmen now serving in the Training Devices career field.